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STATEMENT FOR 1899–1900.*

By BENJAMIN IDE WHEELER.

The estimated deficit of the University for the year 1899 and 1900 as forecasted in the report of the Finance Committee of October 9, 1899, was $31,000. By careful, if not penurious management, and chiefly by preventing infringement upon the contingency fund, this threatened deficit has been reduced to a real one of about $10,000.

The income for the next year may conservatively be estimated at $410,000. This does not include the $27,000 income from the Wilmerding fund which is being used for the support of the Wilmerding School in the city of San Francisco.

Of the $410,000 estimated income, about $225,000 will come from the two mill tax, of which, under the provision of the law, one-quarter, or about $56,000, will be set aside for permanent improvements. The remainder of the income will be derived from the experiment station fund, $15,000; and the Morrill College Aid fund, $24,000; the scholarship fund, about $5,000, and from investments, etc., about $135,000. Of this income about $56,000, as already stated, must be set aside for permanent improvements. From $27,000 to $28,000 must be appropriated for the Lick Observatory, whose special fund brings in only about $5,400. Ten

* President's Commencement Statement, 1900.

thousand dollars must be used for scholarships. The income, therefore, which will be available for the immediate educational uses of the University at Berkeley will be a little over $300,000, a sum, however, less than that which the collegiate department of Harvard University collects for tuition alone. The total income of Harvard University for the year 1899–1900 was between four and five times as great as the income estimated above for our University.

Within the past ten years the income of the University has grown about seventy per cent, the attendance of students about three hundred and fifty per cent. This plain fact brings the University face to face with most serious embarrassment. The situation cannot be aided by anything short of permanent sources of income. A University is a continuous existence, and can be safely aided only by funds which yield a stated income, or equipments which involve no expense.

COMMENCEMENT DAY ADDRESS.*

By Benjamin Ide Wheeler.

It may well be that the bustle of these last days in college, the diverting round of fêtes, the veneer of merry-making, conceal for a little from your minds the real meaning and importance of this day to your lives. It is not so with your friends who are assembled here; it is not so with us who have been your teachers. We know beyond a peradventure that your time of testing is come. We see in you a body of men and women who have enjoyed large opportunities; who are blessed with strength, health, and youth; who have before you a world in which is offered the freest field for energy, wisdom, and righteousness that ever lay before the sons of men. All this we see in you and we rejoice. But we see and know as well that education and youth mean no more than the tale of the talents for which you will be called to render account. What will you do with the talents? That is the question. What will *you* do with them?—for it is at *your* door the question knocks. I care a great deal about what you do with them. All your teachers care a great deal; all these assembled here, and the hearts of many absent ones who are with you in thought, all these care a great deal what you do with them. But *we* have done our work, the burden is upon *you*. What you will do with your opportunity depends now upon your choice and your will. You can be what you will to be; you will not be, you cannot be, aught else.

* President's address to the Graduating Classes, 1900.

So this is the meaning of this day to those who have eyes to see. You take the tiller into your own hands, you strike out to swim in open water, and leave the life-belt behind.

The life into which you are to enter does not differ in kind from that which you leave. The modern college, fortunately enough, has not been to you what the old-time college sought to be to its students,—a place of seclusion from life, pens where human souls were stall-fed, bureau drawers where pears were laid away to ripen into soft succulence. More and more, as the earnest, busy, modern years go by, the modern college is coming into touch with the realities of life. More and more its gates and windows open to the breeze-currents of the outer air; more and more of the real activities of the real world come within its scope to be ennobled and uplifted by its influence. Less and less is the learning of the schools and chairs made an end unto itself; more and ever more is its effect considered in the production of effective personalities, in the shaping of character, of the power to do, and to do nobly and well. Learning which cannot at need be shoveled under boilers and transmitted into power is poor ballast for any craft.

The life into which you are about to enter does not differ so markedly in kind from that which you leave. It is an educational institution as much as this is; it is a great university, the greatest university. In it you will go straight on learning and growing, if you do as you ought to do, and you will learn a great deal more, and learn it more surely than you ever have here. You will find that this greatest university into which you are entering has very definite rules, employs a rigid marking system, tolerates no "cuts," and deals very little in "free electives." As a general rule the kind of men and the sort of work that have succeeded here will succeed there; and this is so because those who have succeeded here have done so chiefly through earnestness of purpose and force of will, for these are the chief conditions of success always and everywhere.

Wherein then does life differ from the University? I should say in the heightened degree of direct responsibility. Whether you sink or float will, in the future, depend less on buoys and bladders and more on your own good sense and your own good strokes.

You will miss sorely, as the days go by, the kind offices of these good mentors who have told you frankly when you erred, and when you were making fools of yourselves, and as you grow gradually more dignified and inapproachable you will have occasion to miss them ever more and more, for the number of those who deal frankly with your shortcomings (especially if you lack the boon of a faithful wife or husband) is sure to grow less with the years. The farther you get from land, the more ruthlessly will your weaknesses and your mistakes avenge themselves directly upon *you*. The opportunities to "make up conditions" will constantly grow fewer.

That which for the life struggle will stand you in best stead of all you take out from here will, I venture on experience to prophesy, prove to consist of habits more than of lore, and of ideals more than of recipes. The world has more use for trained men than for knowing men, and elects wisdom before knowledge, and character before brilliancy. Fortunate will you be if in the doing of the tasks here you have acquired a self-directive power whereby you can hold body and mind to continuous, definite work,—an honest dealing with honest facts; if you have learned to sail your lives on a definite course, and can steer by help of rudder and keel all your choosings, doings, and thinkings.

The world expects a great deal of you, and it has a right to, for you are the favored children of its opportunites. The State of California expects a great deal of you, for it has given you, so many of you as are from the academic departments of the University, without fee or recompense, advantages which commonly open elsewhere only to the payment of money. It expects to be repaid in no stipulated service, but it expects to be repaid in better citizenship, in

lives useful to society and the state. It expects to find in you men and women who love the right, who can see the truth and face the facts, men and women who hate a lie and all its vermin, reptile brood that cower in sullen corners and hug the dark,—the lie of ignorance and superstition, the lie of prejudice,—the lie that tabooes a brother man because of station, work, color, birth, or faith; the lie that smirches reputations for selfishness and envy; the lie that urges false motives and seeks to bend the judgment and actions of men away from the true and the real,—the lie whose home is in hell with the father of lies, and whose ways are the ways of death.

The world expects of you honesty and the courage of honesty. It has men enough who have lost all power to see, who are blinded to all but expediencies and have no sense for the truth. It has cowards enough who shrink before entrenched vice and prejudice, and who dare not draw the sword of open speech and ready action against the ogres of untruth and dishonesty, political and social. There never was greater need for courageous, truth-speaking, truth-living men than to-day, when the very pillars of the State are made insecure through cowardice and untruth. The world expects of you action that is based upon intelligence; it has enough of action based upon tradition, prejudice, and narrowness. It expects that what you do, you will do because there is a reason for it. It expects that you will stand fast with those whose action is dictated by reason. The world expects that you will act in loyalty to ideals. All that holds humanity away from the brute is that broader view and larger outlook which merges in idealism. If your education has not given you ideals, then you have not been educated at all. The world has enough men who spend their lives with heads bent over the muck rake, and know not of the blue that is above them, nor of the angel that holds the crown. The world wants more men who live for large things, who take large views of life, who believe that life is more than bread and that the unseen is stronger than

the seen. Into a life of measureless possibilities you are now entering, and I adjure you in the name of the intellectual faith, in the name of noble academic traditions, in the name of your beloved alma mater, to be true to those ideals which have lived in the life you have spent here in these years that have passed. What you will be, and what you will do, will depend upon what you choose to be, and what you choose to do. The days of your apprenticeship are over. You enter upon the responsibilities of manhood and womanhood; the field is your own, and what ways you choose will be your own ways. What seed you sow will mark your harvest. You can be what you will to be. Be strong, and true, and valiant!

THE DIVINE ELEMENT IN COMMON LIFE.*

By CHARLES REYNOLDS BROWN.

"The tabernacle of God is with men and he will dwell with them." Rev. 21–3.

The feeling that somewhere a divine being lives and works is instinctive with the human race. Simple, primitive men saw the procession of the stars, the rising and setting sun, the change of the seasons, the fall of the rain, and the motion of the wind, as we see them now. These things were not under human control; they were not made by human hands. There must be lying back some unseen being or beings who made and controlled them. Those early men were not scientists nor philosophers, but in some such fashion they rose to the idea of a divine element in this earthly life.

The next point was to locate these divine beings. Every man had his place of abode; even in the nomadic state he had a temporary spot or tent that was his own. The place of residence for chief or sheik was a matter of importance. Their rude minds were not ready for the idea of omnipresence, even if such conception had been attainable. We find, therefore, many rude attempts to fix the home of these divine beings.

The nations that believed in gods many and lords many, assigned to each a limited and local jurisdiction. It was

* Baccalaureate Sermon, delivered to the Class of 1900, May 13, at the First Presbyterian Church, Berkeley, by the Rev. Chas. R. Brown, Pastor of the First Congregational Church of Oakland.

supposed that each god had selected his home with reference to the interests he had in charge. He dwelt in a particular spot or region. The early Israelites regarded Mt. Sinai as the residence of their deity. It was "the mount of God," the seat and home of Jehovah where he could be seen face to face.

Along with this notion, and then gradually supplanting it, there came the belief that God lived in houses set apart for His use. To enter the tabernacle, the temple, or the Holy of Holies, was to stand in the presence of Jehovah. He placed His name there, as a man fixes his name upon the door plate of his home, and then "the glory of the Lord filled the house of the Lord."

Still later the divine residence was placed in the skies. When men prayed they said, "Hear thou in heaven, thy dwelling place, and forgive." According to their thought, "the heavens were the Lord's, but the earth He had given to the children of men." God had created this world in the beginning; He occasionally interrupted its ongoings by miracles or special providences, but for the most part He dwelt among the stars and allowed the earth to run itself.

These attempts to find God are no longer satisfactory. They are not productive of the moral help that religion should offer thoughtful men. In the course of man's development, each has dominated the religion of the period, and each may have served a certain end. But to-day we have come to a conception of the divine which is more in harmony with the teaching of the New Testament. It is that suggested in the text—God is here present in the total life of this world. He is more especially resident and powerful in human affairs. The tabernacle of God is with men and He will dwell with them.

With men! With what men? Not with a few saints shut up in cloisters, nor with lonely ascetics living in the desert upon locusts and wild honey! All these, Christ said, are less than the least in the true kingdom of God. The men named in the passage where the text stands are

city men. They are surrounded with walls hugh and high; they are men of affairs. They carry on the traffic in great values—the mighty ones of earth are bringing their glory and honor into the corporate life. They live in a place of large intelligence—whole nations are walking in the light that shines from this seat of eager activity. They dwelt in a place of joy and beauty—music, precious stones, and trees bearing all manner of fruit are ministering to their pleasure. They are controlled by moral aims—they cast out the things that defile. In the vision of the ancient seer these live, active, efficient people, busily engaged with the great common interests that belong to society, were the men with whom God made His home.

We may say frankly then that God, so far as we know Him, finds His residence in the thick of human affairs. He lives where the people are. His interests are no other than their interests. The old pagan idea of religion was cast largely in terms taken from the relation of master and slave. On one side a despot dwelt apart, recognizing no obligations to his subjects but levying tribute upon them in the shape of offerings, ceremonies, and sacrifices, that were supposed to gratify him. On the other side were slavish worshippers, seeking to placate, to appease, or to cajole their royal tyrant; they held that the obtaining of his favor did not necessarily involve personal righteousness, but it demanded punctilious observance of the ritual of his court.

The new conception of religion is framed altogether in terms that belong to the relation of father and child. The obligations are mutual; the interests are one; the bonds of union are moral. The great Father, from whom every fatherhood in heaven and on earth is named, lives to fulfill Himself through the lives of His children. This world of human interest is no outlying dependency on which He levies tribute, on which He looks down in gloomy severity, which upon occasion He may visit—it is His home. The seer claimed that the whole range of interests that belong

to human welfare and progress is the place of God's affection, the sphere of His holy activity, the concrete material from which He frames His loving purposes—the tabernacle of God is with men and He dwells with them.

This was the oft repeated teaching of Jesus. He said to the Samaritans who were narrow and local in their conceptions, 'Neither to this mountain nor to that sacred building at Jerusalem shall men go to find the Father. The Father is the indwelling, informing, and uplifting Spirit in all right life. Anywhere and everywhere men worship the Father when they live and worship in the spirit and in the truth.'

And when Jesus sent his servants out to sow his good seed, he told them frankly, "The field is the world." The place where religion is to grow is no holy corner walled in and shut off from the rest of the earth. The tired life of mankind may now and then come into such quiet places to rest and renew its strength, to wash itself clean in fresh baptisms of divine help, and to think soberly upon its definite aims; but it must go and live its real life out in the open where men are struggling and suffering, where they are sinning and dying. The field that furnishes the soil where religion finds material for the expression of its full life is nothing less than the total world. The world indeed where men pray, love, and adore; where they struggle and wrestle together in gaining their livings; where they build houses, bridges, ships, and railroads; where they plow, sow, and reap; where they love, marry, and rear families; where they organize states, enact laws, and make history—this big, powerful, complex thing called the world is the field, Jesus said, where the good seed of religion is to be put down under the surface and made to grow. This field alone is sufficient to furnish the harvest Christ came to reap.

The hope of the future as to high moral aims and true spiritual values, lies in our frank, courageous acceptance of this New Testament thought of the divine. The day when intelligent men could be interested in a God who dwelt away

in some lonely mountain is gone. The day when they can be brought to worship a God who lives only in sacred buildings and is mainly interested in what goes on there is fast going. The day when they will consent to think of Him as dwelling apart in the skies, whither He seeks to entice men by loosening their interest from earthly affairs ought to go. The world is not a sinking ship from which it is the purpose of God to rescue men by some Gospel raft. In so far as it is a ship at all, it is one that we must learn to sail, to make safe, steady, and comfortable. The fact that it encounters rough seas utters the louder call for efficient seamanship. The thought of willingly abandoning it does not enter the mind of a sound man; he is here to make his voyage and to bear his part in bringing the total life of his race at last into the haven of a thoroughly Christian civilization. The source of the confidence that right-minded and pure-hearted men feel in this large undertaking is suggested in the text. Back of us, above us, and within us lives the One who is responsible for the venture. The home of God is with just such men, and their lofty enterprises are movements of His energy for the accomplishment of His great aims.

I do not need to remind you that men are not interested to-day as they have been in the past in a religion that is local, or mainly ceremonial, or largely celestial. But there has never been a time when they would respond more eagerly or powerfully to a religion that is ethical, practical, terrestrial. Such a religion has in it no less of the divine but it finds the divine where John found it, that is, with men. If God lives with men, then the more we enter helpfully into those movements that are for the well-being of our fellows, the closer do we come to Him. To know Him, not as an abstract philosophical principle, nor as a distant object for holy contemplation, but to know Him by participation in His purposes, by sharing in the energies of His life, and by the fellowship of deeper experience, this is life eternal.

One of the fundamental concepts in modern religion is the unity and continuity of the human and the divine.

Christ meant it to be. He said their mutual relations were like those of branch and vine. The glory of the vine is revealed in the number and the fruitfulness of its branches, and the salvation of the branches rests back upon their vital connection with the parent vine. The glory of God is to be seen in the extension of the spirit and method of His son Jesus Christ into all the varied activities of human life; and the salvation of every individual life rests back upon its vital union, through reverence, obedience, and love, with the sustaining life of the Father.

We owe a debt to poet and scientist for the way they have interpreted anew the phases of the physical world. The heavens declare the glory of God and the riches of earth show His handiwork in a way undreamt of by the Psalmist. We sit in the sunshine as at the open hearth of a fire kindled by the Father. We walk through the Sierras, seeing in their strength, their stability, and the history of their formation, constant reminders that the Lord is round about His people, and His unhurried, undefeated purposes enfold us like everlasting arms. We regard the breeze that sweeps through a city on a hot August afternoon, cooling the pillow of pain, calling children from petulance to playfulness, and bringing relief to many a weary toiler, as "a compassionate movement of the life of God across the troubled life of man." The world about us is a nobler servant of all the values when it is no longer mere weather and scenery, but has become the home of meaning and purpose.

History needs the same reverent and vital interpretation. I do not mean ancient history nor Hebrew history alone, but the history you and I and all the men about us are making every day. The real presence of the Divine Spirit is not to be found in bread and wine, in relics or holy water, in shrines and buildings, but in men. It is to be found preëminently in those men of intelligence, resolution, and high moral aim who have at heart the well-being of mankind.

I would not limit it to those who become conscious and

accredited agents of moral progress. Nature secures her ends in many ways. She has for instance steadily in view the fertilization of the plants. It is accomplished now by bees and now by birds and now by the wind. These servants of hers are not conscious of the ends they serve. The wind bloweth where it listeth in apparent unconcern; the bees are drawn by the brightness of the flower or by the sweetness of the honey, bent upon their personal ends. The farmer rests his hope of an abundant crop of clover seed upon the activities of the bumble bees, and while they steadily serve this forward movement in the clover field, they are blind to any values beyond the satisfaction of their immediate desires.

In similar fashion some men crowd and struggle together intent on personal gains but serving all the while wider interests of which they scarcely dream. The demand for strenuous toil as a means of livelihood; the domestic ambitions awakened in a man's breast by the sight of a beautiful woman and the thought of a wife and children; the joyous prospect of standing in a position of influence and emolument in the world of education, politics, or commerce; the sweet gains of pleasure, travel, culture, and recreation that honest effort makes possible—upon all these men are eagerly bent, sometimes without the recognition of the higher values they serve. Where the effort is wholesome it works out results unknown to the bread and butter philosophy of life.

But how much more is added when we become genuinely religious and have a theory of life that holds in view these higher purposes of existence! Imagine the delight that would come to the bees, the birds, and the wind, were they capable of moral consciousness, could they see the place they fill in the growing world of plant life! It is here that religion affords inspiration and moral stimulus to men. Through all these plain necessities and activities of ours, an increasing purpose runs. When we toil, study, strive, and love, we are not looking simply at the things that are seen but at the things that are unseen. The brightness of

the flowers, the fragrance of their perfume, and the rewarding honey that lies within them are the things which are seen and temporal; but the moral development and the advancement of that kingdom which is to have no end, becomes the great commanding reality which is unseen and eternal.

These common problems which are sometimes called secular—the effort to make our cities clean, safe, and sanitary; the establishment of educational methods that are sound and useful; the settlement of industrial questions in ways that are just and right; the recognition of the fact that business is for the development of men and not men for the development of business—all these are not secular but sacred. These questions touching the health, the intelligence, the general well-being and moral development of human lives, when compared with questions of ritual, ceremony, or technical dogma, stand out as the ones distinctively sacred. It is in these vital movements that serve the human values best that God makes His earthly home, and we come close to Him as we enlist under the leadership of Jesus Christ for this genuine service.

Two men walked away from Henry Ward Beecher's church after a splendid sermon. One of them remarked, "He seems like a man who lives very near to God." "No," replied the other, "he impressed me as a man who is much among the people and who lived close to men." "Well, that is where God is," said the first. Beecher when he pleaded the cause of the slave; when he spoke in England against the sentiment that would have aided in dividing our nation; when he uttered his brave protest against the wooden theology which was hindering the growth of vital religion; and when he sent out his messages of sympathy, comfort, and inspiration to the troubled and burdened, was getting very near the heart of God. The great leaders and the great movements when characterized by intelligence, by high moral aim, and by a sense of the spiritual values involved are never secular, it matters not what sort of building shelters their work. These efforts are movements

and accents of the Holy Ghost, and they deliver His message to us fresh and living in the tongue wherein we were born.

As representatives then of the higher education, as men and women bent upon knowing the best things that have been said, thought, felt, and done, I ask you to think of the forces, both human and divine, that are to make the world what it ought to be, as already here. You need not ascend into the heavens to bring them down, nor go to the depths to fetch them up; they are already here waiting to be recognized and utilized for human help. God is not saving the world from the outside but from the inside. He is an abiding part of it. He is the sustaining vine that upholds and fills all branches of its life according to their capacity and willingness to receive His aid.

President Eliot, in speaking of the concern that universities feel for the presence and permanence of wholesome religious influence, used these words: "Universities exist to advance science, to keep alive philosophy and poetry, and to draw out and cultivate the highest powers of the human mind. Science is always face to face with God; philosophy brings all its issues into one word—duty; poetry has its culmination in a hymn of praise, and prayer is the transcendent effort of human intelligence."

It was finely said. It came from a large, ripe scholarship, familiar with the forces and problems that will engage your attention as university men and women. It lifts to the highest place of honor that personal acquaintance with the august realities of religion which makes for moral completeness. The religion to which he referred is not something apart from life; it is life itself, nobly lived. It is the new attitude of faith and hope and love that brings the spirit of Christ into the common life. It is the discovery of the divine in this present world, the enjoyment of His aid in these plain affairs, that demand our daily effort. It is the achievement of full-orbed manhood through honest coöperation with this same God who forever finds His tabernacle with men.

HAWTHORNE AND THE SHORT STORY.*

By Walter Morris Hart.

From the point of view of the student of technique, of literary forms or types, the history of literature presents a series of phenomena probably not unlike those which the evolutionist finds in the material world. Literary development, that is, obviously can not begin with a perfected and highly organized type, like the Epic or the Novel, any more than the history of the animal kingdom can be said to begin with the last result of its evolution, Man. For the modern anthropologist, the proper study of mankind is no longer man alone; the simpler, less highly organized types are important also; the proper study is all the forms of life; it is historical. The analogy holds for the Short Story; if we confine our attention to the work of the modern masters, to the tales of Kipling and Guy de Maupassant, for instance, we shall never understand the type. Our study must be historical. It may, however, be confined to the work of a single author, if this lies midway in the development of the type, early enough to retain the marks of the origin, late enough to give some fairly definite promise of what is to come. These conditions are fulfilled by the work in the three volumes of Hawthorne's Tales. It looks forward and backward; it shows the relation of the Short Story to the Novel and to the Essay; it shows clearly, in form and content, the influence of the Romantic Movement, in Literature, and

* Read before the Fortnightly Club of San Francisco, January, 1900.

of the Transcendental Movement, in Philosophy; it is not without hints of that perfection of form which characterizes the Short Story of our own day. A study of Hawthorne's work, then, is the study of the Short Story in general.

The relation to the novel is fairly obvious; both are fiction, both narration. The name suggests that brevity is the essential differentia of the Short Story; but this is not the case. I can imagine a Short Story longer than a novel, without confusion of the types. It does not accomplish brevity by compression—by telling the whole story in fewer words; but rather by selection—by discriminating a certain typical incident, or group of incidents, which is critical for the characters concerned. It is not a novel seen through reversed opera glasses; it is part of the material for a novel seen through a microscope, and discovered to have a peculiar organism of its own. Its relation to the novel is not unlike the relation of the Greek to the Romantic Drama. The Greek insists upon the unity of action; and out of the wealth of incident and episode that we find in one of Shakspere's plays, it selects a single incident, the last and most significant of the series; and this it elaborates to the utmost.

It is, moreover, not a lineal descendant of the novel. Short prose fictions are as old as prose itself, but for the origin of the Short Story we must examine the periodical essay of the Eighteenth Century, as we find it in the "Spectator" of Steele and Addison, in the "Rambler" of Dr. Johnson, in the "Citizen of the World" of Goldsmith; and the "Indicator" of Leigh Hunt, early in our own century, seems to have a more direct influence upon Hawthorne. In their portrayal and criticism of contemporary life, in their analysis of motive, in their character sketches, often continued from number to number—as in the case of Sir Roger de Coverley—these essays contributed much to the contemporary birth and development of the distinctively modern novel. Johnson's "Rasselas" has been described as a mere enlargement of a "Rambler" essay, and Goldsmith's "Vicar of Wakefield," as having a similar relation to the "Citizen

of the World." But the essay did much more than contribute something to the development of the novel; it gave us the Short Story. I imagine the evolution to have taken place somewhat as follows:

In general, the purpose of the essay is to explain something—a steam-engine, a law, a phase of life, a character, an emotion, an idea. Most often, the essay deals with these *in general*, and, since generalities and abstractions are relatively difficult to understand, the essayist often finds it advisable to append concrete examples, in narrative form. If he writes an essay on "Self-Reliance," he enforces it with a story in which the actions of the main character are notable for this quality. The essayist, perhaps, becomes interested in the story for its own sake, develops the main character to something more than a mere personification of self-reliance, adds new characters, places them in an interesting and appropriate setting, introduces subsidiary incidents. The original purpose may, in this way, be at length submerged, though as an original purpose, at least, it always remains; and the story is not to be accounted for without it. Or, to imagine another case, the writer finds that his public has read the illustrative story with greater relish than the essay itself; his next essay will be mainly story. He goes about it in the same way, however; he begins with a conception suitable for an essay; or, if it be narrative material—a series of events—that first interests him, he abstracts from it the principle involved, and expounds this as an introduction to his story. Primarily an essay writer, he is haunted continually with the idea that a mere story cannot be its own justification for existence, that it must be referred to some general principle or abstract conception, and by that succeed or fail. This feeling, now, determines what sort of change shall take place in the incident, singled out of the series in the longer narrative, and held up in the glaring light of the attention. It is shot through and through with that light, until the vital meaning, the spiritual significance, which every event in the material world serves but to body forth,

becomes clear and evident. All that the numerous incidents of a man's life-time, as set forth in a long novel, may signify—all this will the single incident develop, if we but gaze at it long and steadfastly enough.

Here again the drama offers a suggestive analogy. An important source of the English drama was the so-called Morality, a sort of play in which the Vices and Virtues appeared upon the stage to emphasize, in the action of the play, the superiority of the Virtues, and to enforce certain moral principles. It is not improbable that, from the first, these characters were not for the audience mere cold abstractions. It was not a public of philosophers, but of ordinary men, seeing all things in the concrete. Thus it was for them an easy transition from a Virtue—Justice, say—to a concrete and historical embodiment of Justice—to Aristides. The drama at its height shows the influence of the Morality; Marlowe's "Jew of Malta" is little more than a personification of Avarice, justly caught in his own trap at the end of the play; the Fool in "Lear" is a descendant of the character known as the "Vice" in the old Morality. Literary history repeats itself, then, when the essayist turns story-teller.

I have, for the sake of simplicity, described the process as if it were carried on by a single individual; the individual is here to be regarded as typical of a group; and the process was not a matter of months or years, but of a century. We should expect that writers during this period would not clearly distinguish between the essay and the story, and this turns out to be the case. Even in our own century, this failure to discriminate the two types persists; we find it in Irving, in Poe, in Hawthorne; and to-day, the Short Story still bears the marks of this essay origin.

Irving, indeed, regarded himself as the originator of the Short Story: he was necessarily conscious of it as a distinct type; and yet, as I have said, he was not free from the confusion. He has been called the American Addison; he wrote an exhaustive and sympathetic life of Goldsmith; he stands, therefore, close to these men. His "Salmagundi"

is an imitation of their periodicals; and he conceived the "Sketch-Book" in the same way. It contains many essays, few stories, and a number of papers that must be placed in the debatable ground between the two.

Hawthorne's conception was similar; he had the feeling that short stories were somehow dependent, that, in order to justify their existence, they must be by some means grouped and moralized. This is evident in his plan for an early volume of stories, which was to be known as the "Story-Teller." His purpose was "to represent a young man of apostolical bent who set out to go from town to town, giving a sermon every morning, while a friend who accompanied him was to relate in public, every afternoon, a story illustrating the text previously discoursed upon by the preacher; the whole affair being announced in each place by posters, much in the manner of a travelling show. It might be supposed that the introduction of sermons in a book of fiction would offer a stumbling-block to success, but Hawthorne avoided this obvious difficulty by merely mentioning the sermons and then giving the stories in full."* Such a plan, I need hardly point out, not only shows a conception similiar to that of the periodical, but, in its accent on the idea, on the moral, rather than on the concrete, external events, which catch the attention of the mere story-teller, it implies the expository or didactic purpose of the essay. The plan was never carried out; but in the three collections which include the bulk of Hawthorne's work in the short story—"Twice Told Tales," "Mosses from an Old Manse," and "The Snow Image, and Other Twice Told Tales" —we may still find its traces. That Hawthorne did not distinguish between the essay, and the pure narrative, purpose, is shown by the fact that, of the eighty-three compositions which these collections contain, thirty-three are actually essays—and this, despite the fact that two of the volumes are deliberately entitled "Tales." With these essays we, of course, are not concerned; let us turn to the stories proper.

*Lathrop, Preface to the Twice Told Tales, p. 9.

The artist—the typical artist, distinguished from the philosopher, the scientist, the preacher—deals characteristically in the concrete; ths painter's landscape is composed, no doubt, from a varied experience of the world, but all that can be actually present in the picture is concrete trees and houses, sheep and shepherds. In the same way the novelist is interested in the individuals about him—single characters, single events. These may interest him as exemplifying certain laws; but he cares far more for the individuals than for the laws; and it is the individuals that he attempts to transcribe, to reproduce in his book. Life itself, as we all know, is full of inequalities; it is a truism that Nature never repeats herself; no two men think alike, look alike, act alike. It is this very inequality, this waywardness, that gives zest and flavor to existence. How we rebel against any sort of monotony! How mere undisguised symmetry shocks our æsthetic sense! Everyone knows the look of the palaces of Europe, where the chairs are arranged in straight rows—a big one in the centre, two little ones, exactly alike, on either side, and this group balanced by a table and two chairs against the opposite wall. How cold and barnlike and uninhabitable! By the same token, we do not hang our pictures in straight rows, the smallest at one end, the largest at the other, and the rest in ascending series between. In each of these cases, it is the same thing that offends us; the arrangement is artificial; it is not according to nature; it represents an abstraction, like "symmetry," or "ascending series," rather than the inequality and waywardness of life as we know it. Sometimes the artist falls into the same error; he starts with an abstraction, with a logical conception; he does *not* "hold the mirror up to Nature." In so far as he does this, in so far as he fails to express himself completely in the concrete, to give his work the waywardness of life as it is, be becomes preacher, scientist, expositor—what you will; he fails as an artist! Artist though Hawthorne was, he was also by birth a Puritan; he had the Puritan interest in the problems of morality—in

sin and its punishment, in the struggles of the conscience; he lived, moreover, in transcendental New England; he was a contemporary of Emerson there; philosophy was in the air. The tendency to preach, to philosophize, the tendency to expound an Idea, rather than to transcribe the wayward facts of life, was strong, became at times irresistible. This, for Hawthorne the artist, spelt "failure." I recall a striking example. When Hawthorne was a young man, it appears that one "Mary," whom Hawthorne's son and biographer, Julian Hawthorne, describes with some enthusiasm, as a "social enchantress," a "clever actress," and a "liar," entrapped Hawthorne into a friendship, and finally told him as her champion, that his friend "Louis" had basely wronged her. Hawthorne, in consequence, immediately challenged Louis; but the latter knew the woman, and the thing was explained, and Mary crushed. Presently, Cilley, another friend, was challenged by a Southern political opponent. He accepted the challenge, because Hawthorne had been so ready to fight, and was killed in the duel which ensued. Hawthorne, naturally, was deeply affected; nevertheless, he used the material for a story. It seems, indeed, full of fine possibilities—opportunities for portrayal of contrasting characters, for the exhibition of strong motives, of passion and action, for the elaboration of dramatic situations. And what did Hawthorne do? The Puritan got the better of the artist; he flung aside all this concrete matter; he abstracted just the moral question involved: Is a man guilty of a deed which he plans but does not carry out? Did he go to life, to experience, for details with which to clothe and present this abstract problem? Not a bit of it. All that experience actually gave him was the mechanical device of a peep-show, which he had seen somewhere at a country tavern. This he supposes to be in the hands of Fancy, or Imagination, (he calls the story "Fancy's Show-Box") who, by its means, recalls to an old sinner the events of his past life. The respectable old gentleman protests that he was never guilty of this or that crime. "Not in the performance,

perhaps, but in thought," Fancy replies, "and your guilt is as great in one case as in the other." Hawthorne, you will readily see, has here defeated his own purpose. For the very title of the story stamps it at once as artificial; events are first chosen for their mere moral value, then brought up by the mechanical device of the show-box; they lack the waywardness of real life. How much more convincing is the true story as Julian Hawthorne tells it. For it is a bit of real life, always far more deeply significant (as, I believe, Hawthorne himself would have admitted), far more deeply significant than any disquisition of the moralist!

One other example is worth citing; in his story of the "Great Stone Face," Hawthorne again began with an idea, and proceeded, like the essayist, to arrange his material in logical order. The plot of the story is something like this: The Stone Face is a peculiar group of rocks near the summit of Mt. Cannon, in New Hampshire, which, viewed from the valley below, closely resembles the vigorous but time-worn profile of some New Englander of long ago. A mother tells her son, Ernest, the prophecy, "that at some future day a child should be born hereabouts who was destined to become the greatest and noblest personage of his time, and whose countenance in manhood should bear an exact resemblance to the Great Stone Face." To see this prophecy fulfilled becomes the great hope of Ernest's life. A simple, obscure husbandman, he becomes a preacher by force of deep thought inspired by continual brooding upon the Face, by holding fast, that is, to a high ideal. In the meantime, he sees Merchant, Soldier, Statesman, Poet, each attempt to fulfill the prophecy, and each one fail. At last, while Ernest is preaching, the Poet sees the resemblance; Ernest himself fulfills the prophecy. But he is humbly unconscious, and still waits for a greater and nobler. The merchant fails because he thinks of his riches alone. The soldier, because his business is to gain fame by killing his fellow-men, not by making them happier. The statesman seeks his own glory at the expense of truth. The poet lacks faith in his

own ideals. Ernest is humble, simple; thinks not of himself, but of others, is a humble servant of others, true to the ideal of sympathy and love inspired by the Face; after many disappointments, his Faith remains unbroken. He is the true great man. We have, you will have noted, in the attempt and failure of soldier, merchant, statesman, and poet, a series of incidents, arranged in climactic order—like the pictures in the ascending series. Hawthorne himself regretted the artificial structure of this story. It reminds one not a little of the crude narrative of the moral fairy tale. It deals, moreover, with the events of a life-time; it has not the concentrated power of the true Short Story. But further than this, in adverse criticism, one cannot go. Underlying the story, is a noble idea, nobly conceived, and wrought out with all the sincere emotion of the poet. The form thus comes to be inevitable. It is, after all, the form of much of Christ's teaching—the form of the parables. In the story of the Good Samaritan, for instance, we may note the same structure; a certain priest is the first one to see the victim of the thieves; he passes by on the other side; next comes a Levite, who looks at him, but also passes by on the the other side; last comes the good Samaritan, and *he* has compassion on him. This, like the parables of the sower, the vineyard, the ten pieces of money, shows the typical logical structure, the series of similar incidents, arranged in climactic order. Nothing could be better for the purpose—to set forth a truth briefly, in a clear, concrete, portable form. But life itself is as "moral" as any parable, and it is this life itself that we demand that the writer of the Short Story shall transcribe. If we are not convinced of its truth, the story fails; as the Great Stone Face, good as it is, fails because of its artificial structure, and because of its conscious moral purpose.

Thus far, we have considered only *plot*, as affected by the essay-conception; but character is also affected. Hawthorne, it must be borne in mind, lived not only in Puritan, transcendental, New England, he lived in the midst of the

Romantic Movement as well. One of the chief characteristics of this movement was the revival of interest in the works of the poet, Spenser; and Hawthorne, unconsciously no doubt, a son of his time, shows clearly this influence. The fact that he named his first child, "Una," is eloquent of his admiration of the "Faery Queene." The "Faery Queene" is an allegory; like Christ's parables, and the "Great Stone Face," it is fiction in the service of truth. Its characters are personified virtues and vices, and their relations are logical relations. He was familiar too, with "Pilgrim's Progress," another allegory, and this influenced him in the same direction. Beginning thus with an idea, giving his stories logical structure, with Spenser and Bunyan standing at his elbow, it was practically inevitable that the characters in Hawthorne's tales should be types rather than individuals. We have already seen an example of this in the "Great Stone Face," where the merchant, soldier, statesman, poet have no value or interest of their own, but are significant only as four types of failure. It is interesting to know that Daniel Webster sat for the portrait of the statesman, a portrait here stripped of all individual and peculiarly personal traits. In one of the most charming of the Tales—in the "Snow Image," there is another illustration of this same tendency. The originals of the characters in this story were the writer's own wife and children, and yet the charming domestic warmth and intimacy which it certainly possesses, exist in spite of a certain dimness and coldness in the characters, which seem to stamp them, "manufactured in the study."

What is true for plot and character, is true, finally, for setting as well. Here, I imagine, the strongest influence at work upon Hawthorne was that of Emerson, and the transcendental movement. In the same chamber in the Old Manse, where Hawthorne wrote the "Mosses," Emerson had, but a few years before, written his thin volume on "Nature." For Emerson the ultimate reality is not matter, but mind, spirit. Of this the material world is but an expression, as

words are the expression of thought. Nature is symbolic, emblematic; its significance is moral, its laws are moral laws. "A noble doubt perpetually suggests itself—whether this end be not the Final Cause of the Universe; and whether Nature outwardly exists. It is a sufficient account of that Appearance we call the world, that God will teach a human mind, and so makes it the receiver of a certain number of congruent sensations, which we call sun and moon, man and woman, house and trade." "Nor can it be doubted that this moral sentiment which thus scents the air, grows in the grain, and impregnates the waters of the world, is caught by man and sinks into his soul. The moral influence of nature upon every individual is that amount of truth which it illustrates to him. Who can estimate this? Who can guess how much firmness the sea-beaten rock has taught the fisherman? how much tranquility has been reflected to man from the azure sky, over whose unspotted deeps the winds forevermore drive flocks of stormy clouds and leave no wrinkle or stain? how much industry and providence and affection we have caught from the pantomime of brutes? What a searching preacher of self-command is the varying phenomenon of health!" For Hawthorne, the world about him must have worn much the same symbolic and moral aspect. Readers of "The Scarlet Letter" will remember many evidences of it there—the rose-bush by the prison door, the armor on the Governor's wall, the scarlet letter in the sky. The title of the tale already mentioned shows the same tendency, and it is characteristic that the idea for it first came to Hawthorne as a suggestion of interpretation of the Great Stone Face as an actual influence in men's lives. The first hint for the story is recorded in the Note-Book of 1840: "The semblance of a human face to be formed on the side of a mountain, or in the fracture of a small stone, by a *lusus naturæ*. The face is an object of curiosity for years or centuries, and by and by a boy is born, whose features gradually assume the aspect of that portrait. At some critical juncture, the resemblance is found to be perfect. A prophecy may be connected."

If the transcendental influence is thus clearest in the setting of Hawthorne's stories, it is by no means restricted to this. Nature is not mere motionless landscape; it is living and moving; it includes all life. In this larger aspect, including man and his actions, its reality lies for Emerson in its meaning; its central Unity is conspicuous in action. "Words are finite organs of the infinite mind. They cannot cover the dimensions of what is in truth. They break, chop, and impoverish it. An action is the perfection and publication of thought. A right action seems to fill the eye, and to be related to all nature." Evidently the transcendental influence was at work also in shaping the action, the plot, of Hawthorne's Tales, giving it, as we have seen, often an artificial structure, in order to expound as clearly as possible the underlying thought. The Note Books, again, show this tendency. Events in the material world suggested possible plots only when they possessed symbolic significance. This interpretation was sometimes clearly seen, sometimes dimly felt, as in this note: "A person to catch fire-flies, and try to kindle his household fire with them. It would be symbolical of something." The character, too, must, as we saw, stand for something, body forth a thought, be a type.

I have made bold to point out as defects in Hawthorne's work, (as well as evidences of the essay origin), the logical structure of plot, the type instead of the individual character, and the symbolism in the setting, because these affect the reader as something cold and artificial, as being untrue to life, unconvincing, in a word. But Hawthorne would have heard this criticism with equanimity. He cared nothing for verisimilitude; he was satisfied with allegorical truth. No one certainly ever introduced supernatural motives more frankly, more naïvely, with less attempt to make them appear real. Of mere literary artifice he was never guilty. He seems to play with the reader; he leaves him in doubt, at the end, as to whether the thing really happened or not. Did the Snow Image really come to life? Did the ghosts of past governors really march down the

great stairway of the Providence house, to attend the funeral of British rule? Did young Goodman Brown really see his pious neighbors at the witch meeting in the forest? After all, it doesn't matter very much; in each of these stories the idea is the main thing; events in the material world only serve to body this forth:—the insight of simple faith; the end of British rule; the existence of secret sin. In no case is the supernatural essential to the story; the truth of the story is other and deeper. It was his purpose, Hawthorne tells us in the preface to "The House of Seven Gables," "to mingle the marvellous rather as a slight, delicate, and evanescent flavour, than as any portion of the actual substance of the dish." Thus his work came to have, like the Old Manse, "not quite the aspect of belonging to the material world."

I have already spoken of the influence of Leigh Hunt, and his essays in the "Examiner" and "Indicator": it is in this connection that this can be most clearly traced. Hunt's "Tale for a Chimney Corner" shows the delicate and evanescent play of the supernatural,—the supernatural not convincing in itself, but because of its moral significance. It is worthy of note that the source of Hunt's tale was German; and we find Hawthorne coming more directly under an influence that here reached him only by way of England. Poe, I believe, was the first to point out the resemblance of his manner to that of the German, Tieck. This may, no doubt, be traced in detail in several directions; the German's story of "The Elves," for instance, offers some striking parallels to the "Snow Image." The same "soft light of domesticity" plays over the pages; there is the same vaguely defined and evanescent relation to the supernatural, so delicate that only the idealistic mother and daughter are conscious of it at all, while to the skeptical and dogmatic father, even material proof is not convincing. It is not improbable that Hawthorne got his idea for "Feathertop" from Tieck's "Die Vogelscheuche." But I imagine that the resemblance is not so much a matter of

detail as of general treatment, of manner. It is nowhere closer, certainly, than in the introduction of this morally-convincing supernatural. Instead of Puritanism, Tieck inherited the romantic traditions of the German forests, and his task was to reproduce, as Carlyle says, "the true tone of that ancient time, when man was in his childhood, when the universe within was divided by no wall of adamant from the universe without, and the forms of the spirit mingled and dwelt in trustful sisterhood with the forms of the sense." Tieck was one of a little group of romantic writers who lived in Jena near the beginning of the century; Fichte, the philosopher, was a member of the same group; it was his philosophy that Carlyle set forth in modified and popularized form in his "Sartor Resartus;" "Sartor," in turn, inspired Emerson. Thus, whether we trace the line through Tieck, or through Emerson and Carlyle, as surely as all roads lead to Rome, we come at length to Fichte and German idealism. Further than this we need not go; the English periodical essay, and, across the North Sea, German idealism, in the eighteenth century, each unconscious of the other, were working together to produce the short story of our American Hawthorne.

POETRY AND MATHEMATICS.*

By E. J. WILCZYNSKI.

Human minds differ from each other as the leaves of a forest. But while the diversity of the forms of Nature is vast, not one duplicating exactly any other in shape or color, still the different individuals have much in common. The differences between plants of the same species are not in general considered as of much importance. It is not the tendency of modern botany or of modern zoölogy to emphasize even the differences between different species. On the contrary, from the modern evolutionary standpoint, the relations between the different species are far more important, and the distinctions, which certainly exist, appear to be capable of explanation as the result of a gradual process of differentiation. Such seems to be the standpoint of modern science. But it is, to a certain extent, the standpoint of all science. For even before Lamarck, Darwin, Hegel, and Spencer, plants and animals were arranged in groups according to their resemblances. It is likeness which is at the bottom of all classification, for else each individual would form a species by itself.

Science assumes, in other words, a general point of view. It does not care to know about the oak in our front yard, the single individual oak; it studies the oak as a type, the oak as such, the general oak. From the examination of all the individual oaks, the ideal oak is evolved, and it

* Read at the annual meeting of the Science Association, May 2, 1900.

is this, not the individual, with which the scientist is concerned. In this respect, science and every-day experience are opposed to one another. For, in ordinary life it is the individual with which we are concerned. Science is of some use in this, because each individual belongs to some species, and if we know the character of the species we know something about the individual; but not that which is characteristic of it as an individual. In a certain sense, then, the scientific point of view loses that which is the most valuable, the personality of the individual. But important as personality is to us, and no matter how highly we may cherish it, it is also of the greatest importance to recognize what is general, what is common to the different individuals. This must be done even in studying personality, for personality is but a variation from the general type, which must therefore be known; while of course, also, in order to study a general type, individuals must first be investigated.

The human mind has never been satisfied with the examination of the objects of the external world. It has loved to contemplate itself ever since the crude Ionic philosophy gave way to Heraclitus, Parmenides, and Socrates. It has found itself its most absorbing and also its most difficult problem. But, in studying itself, it has not always followed this method of seeking relations and resemblances, which it has applied to external objects, as plants and animals. Observing itself, the intellect discovered a strangely complicated combination of conceptions and ideas, and its task has been mainly an analytical one, attempting to sever with the sword the bands which tie them together, as Alexander cut the Gordian knot. It has proceeded anatomically. As the phrenologists rashly attempted to localize the different traits of human character in particular parts of the brain, so, many have found it attractive to speak of the divers faculties of the mind as of so many separate entities, recognizing no relation between them, not noting the points of resemblance but only those of distinction. To persons of this stamp, the mind is as a

box filled with various objects, having no particular relations to each other, scarcely capable of as much unity as a lady's sewing-bag, the various articles in which have at least a common purpose.

Such would be the standpoint of the individualist, who strongly emphasizes such distinctions as, for instance, between the scientist and the artist. The distinctions are there, but it seems wise to point out the resemblances, which are also there. But this is rarely done, so rarely in fact that most men think that such things as closed domains of thought, which have no point of contact with other realms, actually exist. And because there are so many who think this way, the intellectual world instead of being at peace with itself is in a perpetual state of turmoil. The different phases of the human mind are continually waging war upon each other. It has become almost fashionable for the man of science to speak scornfully of letters and philosophy, and this disdainful feeling is perhaps even more heartily reciprocated by the classical scholar and the metaphysicist.

But if we take the more philosophical standpoint of emphasizing resemblances rather than dissimilarities, we find that most of this conflict is unnecessary, that the divers activities of the human mind, different as they may appear, are essentially one.

But while this thesis is probably not new, it is one that will command continued interest, and any new way of looking at it may not be quite useless.

Probably no two activities of the human mind appear to the unmathematical person to be quite so unrelated as the mathematical and the poetic. If, then, we can, as I think we can, establish a close affinity between these two forms of intellectual power, some progress will have been made, to use a mathematical terminus technicus, toward the demonstration of the general theorem.

The word poetry is to be taken in its widest sense, and, indeed, the word art would perhaps better express my

meaning. I prefer to say poetry, because this word has often been used in just the general sense in which I wish to take it. We speak of a poetically-conceived picture, of poetry in music, as freely as of poetic verse, beauty and thoughtfulness being perhaps the dominant ideas associated with the word.

This is not the first time that mathematics and poetry have been compared. Kronecker and Sylvester, both mathematicians of the highest rank, have frequently laid claim to the title of poet, or artist, for the mathematician.

That no poet has, so far as I know, ever aspired to the equally high honor of being called a mathematician, is, I think, due mainly to the general ignorance concerning the real nature of mathematics. Goethe has said many unkind things about mathematicians, mainly, I fear, because they treated his theory of colors, upon which he prided himself more than upon his incomparable "Faust," with very little respect. But Goethe was really a mathematician, that is potentially and in a wider sense of the word, only he never knew it. The reason for his grudge against the mathematicians has been made very perspicuous by one of his own sayings. "A mathematician," he asserts, "is very much like a Frenchman. He translates everything into his own language." I fancy that Goethe would not have objected to this so much if he had understood the beauty and power of that language, the most perfect ever invented by the human mind, which is at the same time the pride of mathematicians and the terror of the remaining world. His language makes of the mathematician an aristocrat. He can speak only to his own kind. The rabble cannot understand his wisdom. But I fear that the authority of Kronecker and Sylvester, great as it is, will not alone suffice to convince you that a mathematician is a poet. Moreover it would be unmathematical to ask you to take so serious a proposition for granted, even on such good authority. And so it will be necessary to show in detail why I uphold this theorem. The meanings which I attach

to the words poet and mathematician will become clear as we proceed. But so much is clear from the beginning, that not every man that writes verse with a certain amount of ease is a poet. As Sir Philip Sidney says in his "Defense of Poesy": "There have been many most excellent poets that never versified, and now swarm many versifiers that need never answer to the name of poets." Cervantes, Shelley, and Wordsworth have expressed the same opinion. Neither is every man who handles a brush and palette an artist, nor every person who manipulates the keys of that much-abused instrument, called by somebody an ivory-toothed monster, a musician. And, on the other hand, there is many a poet who has never defaced an innocent, clean sheet of paper with a rhythmical account of spring and love, many an artist who has never attempted to spoil a canvas, and many a mathematician who has never studied algebra.

The most characteristic power of the poet is, I take it, emotional rather than intellectual. His soul soars upward like the early lark; his imagination is without bound and carries him far, far away from the regions of actual existence, like the magic cloak in a fairy-tale. And, above all, he thirsts for beauty. It thrills and delights him. He lives upon it; and to the true poet beauty is not rare, for else he would have to starve. He is sensible to beauty wherever it may appear; he sees beauty where we others do not; and why? Because it is his nature to do so. Beauty is the key-note of his life, and he can no more help seeking it, and thrilling with delight over its discovery, than a tuning-fork can help vibrating when its key-note is sounded near by. A poet is born and not made. To quote again Sir Philip Sidney: "A poet no industry can make, if his own genius be not carried into it."

But this is all subjective. Added to these qualities there must be another, to make a poet in the ordinary sense. He must have the power to make objective this potential beauty enclosed within his mind. He must be

able to produce a work which may appear beautiful to others, something born in his own soul and then exhibited to the world. He must materialize the immaterial in concrete form. Matter assumes form under his hands, to use the language of Aristotle. Or, as Plato more clearly puts it, his idea materializes itself so as to become visible. That which is truly real is not the visible incarnation of the idea, but the idea itself. The maker is superior to that which he has made. And, therefore, we must also consider the inner life of a poet as superior to its outward manifestation, and it seems to me that there may be many inward poets who do not and maybe cannot give outward expression to their poetry. Such silent poets, whose utterance is choked by the very wealth of their emotions, exist. The only poem which they write is that of their own life. "Stumme des Himmels," they have been called by Jean Paul Richter; a beautiful and expressive phrase, which deserves to be rescued from oblivion.

But, you will say, am I not disproving my own theory? Is not the mathematician the reverse of all this? Is it not his province to eliminate from the equation all things that do not bear the test of cold, unfeeling logic? What has he to do with emotions and intuition? You think of him as cold, abstract, unfeeling, unimaginative; a calculating machine, and not a man with a warm and noble heart. You think, in fact, that a mathematician is in all things as far removed from the poet as the north from the south pole. He is, you think, a pedant, a dealer in hard facts; useful indeed, like a head of cabbage, but you prefer the rose.

There are some so-called mathematicians who are but calculating engines. But have we not also many makers of verse, claiming to be poets, whose poetry consists merely in a jingle of words without meaning or thought? Is a poor idea made better by saying it in rhythm? Are we to worship a mere form?

Each art has its own way of making manifest to the external world the ideas of the artist, and although the

idea may be the same the poet will present it differently from the painter or sculptor. Lessing finds that Virgil was right in letting Laocoon utter piercing cries when the serpent attacks him and his sons, but that the sculptor of the famous group was also right in letting him bear the pain in silence. What is proper for one art is not so for the other. Thus the language of each art is entirely its own. But the language of the art is not the art itself. Mozart, Beethoven, and Wagner each filled a great many sheets of paper with dots and dashes, distributed in a very peculiar way upon five parallel lines. I have, however, still to find the man who would claim that these famous composers found a particular fascination in the pastime of making dots and dashes. Everybody knows that these are but symbols for tones, that it is not the notes which make a symphony of Beethoven or a mass of Palaestrina, but that for which the notes stand.

The relation between the musical symbols and real music is just the same as that between mathematical symbols and mathematics. Mathematics has no more to do with Greek and Latin letters than has music with dots and dashes. The dots mean something, and that something is music. A mathematical equation means something, and that something is mathematics. Every equation is a symbol for a thought. It aids us in thinking, but it is only a means and not an end. A verse which has exactly the right number of feet is not really a poem unless it conveys a valuable thought. A system of formulæ also must have this inner meaning in order to be worthy of the title mathematical.

Because so few understand the meaning of mathematical symbols, most persons gain the impression that a mathematician is one who combines and shuffles mysterious ciphers in a wonderful and dexterous manner, almost like a pack of cards. There does not seem to be any poetry about it, only cold thinking, without the warm glow of fancy which is so characteristic of the poet. But this is all wrong. In no field of thought does the imagination play

so important a part as in mathematics. An unimaginative mind may indeed acquire considerable knowledge of mathematics, as it may also learn a great amount of poetry, but it cannot act productively. The possessor of such a mind can never advance beyond the region into which his master has led him. He can never point the way into new and undiscovered lands in the boundless kingdom of mathematics. It is the imagination which surmises where knowledge is as yet dim, which boldly asserts as theorems facts not yet discovered, which gives the first glimpses of new and unexplored realms of truth. As a flash of lightning in the obscurity of night, dimly illuminating the path of the wanderer, shows him strange and fantastic views, uncertain and distorted, so sudden and unexpected are the inspirations of the mathematical thinker. And, often, only after many vain attempts does he succeed in lighting the steady lamp of judgment, under whose guidance he finally reaches his goal. Whoever has studied the works of the great mathematicians, of Newton and Leibnitz, of Euler, Lagrange, and Laplace, of Gauss, Abel, Jacobi, Riemann, Weierstrass, cannot fail to be convinced that their wonderful creative power was due principally to their magnificent intuition. They knew long before they proved, not in detail, but as a poet knows the story which he is writing, which he may change in many respects as he proceeds. The systematic logical development of a subject comes only after the ground has been cleared by intuition.

While it has been my endeavor to take into account primarily the most essential element of poetry and mathematics, and while I have attempted to show that it is the same in both, namely the idea, there is something else to be taken into consideration. There is a purely formal beauty in a poem, its rhythm. But this also has its analogy in mathematics. A mathematical equation also has, aside from its meaning, a formal beauty, felt I think by mathematicians in a very decided way. They speak of elegant and beautiful expressions, so that the very phraseology is of an aesthetic

nature. While rhythm is the most important formal element of poetic beauty, symmetry is the dominating formal element of mathematical beauty. But just as a meaningless jingle, although rhythmical, lacks the elements of real beauty, namely beauty of thought, so the real beauty of a mathematical expression lies in its significance and not in its form.

Poetry, it is often said, deals not with what is real. Naked facts are not poetry. When the imagination soars the highest, and when Pegasus is far above the clouds, the poet is in his element. And on the other hand, it is claimed that the mathematician deals only with facts. But this is not so. The conceptions of the mathematician are purely the products of his thought, although they may be, and often are, as are those of the poet, inspired by actual facts. That mathematics deals with truth cannot be doubted, but does not poetry also do this? In order clearly to understand that this is so, it becomes necessary to analyze the idea of truth as understood by the mathematician. Truth to him means simply consistency, freedom from contradiction. Whatever does not contradict itself is true. Reality has nothing to do with it. For the mathematician, for instance, non-Euclidean geometry is as true as the geometry of Euclid, because it is consistent and does not destroy itself by contradiction. The constitution of real, objective space, if there be such a thing, which according to Kant is, to say the least, doubtful, has nothing to do with the truth of non-Euclidean or Euclidean geometry. But we require just the same kind of truth in art. Poetic truth and mathematical truth are identical. It is consistency, and only consistency, which Aristotle demands of the poet in his "Poetics." Unity of action is his great plea, and unity of action we demand nowadays in our dramas. The lesser unities of time and place, about which so much has been written, appear to be but misconstructions of Aristotle's meaning. And there is scarcely a modern play which does not violate them. But unity of action, *i.e.*, consistency,

must not be violated, if the drama is to be a work of beauty.

In this sense, truth being nothing but consistency, the story of Ulysses and the Cyclops, of Faust and Mephistopheles, of Hamlet, of Odin and Thor, of Tannhaüser and Venus, of Lohengrin and Elsa, are true. And, indeed, what other standard of truth have we? If a story is logical and consistent, although it may deal with fabulous creatures, such as we have never seen, have we even, absolutely speaking, a right to assert that the narrated events did not actually take place. Because we have never seen sphinxes, dragons, and centaurs, it does not follow that they do not exist, although we may be reasonably certain in the feeling that we shall not encounter them in the streets of San Francisco.

But a logical defect in a story always destroys its beauty. We do not approve of improbabilities, and, as Aristotle says, even prefer the probable impossible to the improbable possible. What he means is, that it is lack of consistency that disturbs us, not the conviction of the unreality of the action. This strong feeling, this desire for consistency, is due to the powerful reign of the causal category. Whether we believe with Hume that the relation of cause and effect is but the result of association and experience, or whether we agree with Kant that this relation is *a priori* present in our mind, and purely subjective, is for our present discussion quite unimportant. We certainly all of us feel profoundly convinced that everything which happens has a cause, and is again a cause for other events which follow. Especially strong will this feeling be among mathematicians and physicists. Given the condition of a system of bodies at a certain moment, and given the forces which act upon them, it becomes a purely mathematical problem to determine the condition of the system at any other time. And in the more complicated problems of life and history, there will be few to deny that the law of cause and effect works in the same way. The

problem is more difficult, but in the mind of the mathematician, it is in principle only an intricate mathematical problem. If all of the laws of biology and sociology which he is convinced are as invariable as those of chemistry and physics, were known, and if the actual condition of the world in its two aspects, mental and physical, were also known at a given moment, he feels certain that it would be only a mathematical problem to predict the course of events for all future time. The world is then a great mathematical problem, unless indeed there should somewhere be a link lacking in the chain of cause and effect. But no such missing link has been found, and it does not seem likely that it ever will be. This doctrine, although perhaps first explicitly formulated by the great Spinoza, is nevertheless almost as old as philosophy itself. I have no doubt that this was the Pythagoreans meant when they said that the world was composed of numbers. This is the harmony of the universe and the music of the spheres. This is also the necessity of Democritos, and it is this thought which has pervaded all of modern philosophy.

Now just as the world as a whole is a mathematical problem, so is every part of it. And every story told by a poet is the solution of a mathematical problem. The problem is stated in the beginning of the story, when the characters and their environment are described. But while in the real world there can be no such thing as chance, all events which appear to be due to chance having really their causes, even if we happen not to know them, in fiction chance cannot be quite excluded. This is so, because outside of the conditions as laid down by the author, there are potentially present all of the forces of the universe, which cannot properly be taken into account. It is as with the motion of the earth around the sun. Taking only these two bodies as the characters of our story, their history is simply and beautifully told by the laws of Kepler. But all of the other bodies of the universe have their effect upon the motion of the earth and sun, and are reciprocally

affected by them. Strictly speaking, we cannot describe the motion of the earth without describing the motion of the universe. It is like the monad of Leibnitz. The world reflects in its smallest parts all that is, was, or will be. But the effect of other planets and stars upon the relative motion of earth and sun is so slight because of their great distance, that a very fairly approximate history may be told by neglecting their influence. But nevertheless the influence is there. An observer who could determine with absolute accuracy the apparent position of the sun, and who should attempt to explain its apparent motion among the stars merely by the laws of Kepler, would very soon find it deviating from its predicted path. If he did not know of the existence of the planets and of their attraction, the difference between observation and computation would be inexplicable. He would say that Newton's law could not be exact. The earth, he would find, moves nearly as though it were subject to Newton's law, but not quite. Within certain limits, he might say, the earth has a will of its own. And this conclusion would obviously be simply the consequence of his ignorance.

Just so, in fiction, the characters of a story ought to affect each other in a definite and clearly conceived way. Chance, which is really but the effect of non-understood causes, will and must come in. For else we would be confining the characters of the story to their own mutual interaction, which, as in the problem of the earth's motion, is only an approximation. For no man is independent of his environment. But in good fiction chance is kept within its due bounds, and its importance is not exaggerated. We feel this so strongly that we are not willing to have even as strange events occur in a story as we know to occur in actual life. Truth is stranger than fiction. In fiction the improbable appears forced and artificial, for the reason just stated; while in the external world, if strange things happen, we know that there are causes for them. They are strange, but natural.

As in the example just quoted, it often happens in applied mathematics that difficult problems are solved only approximately. But whenever a faithful and enthusiastic worker has solved rigorously a problem whose approximate solution alone had previously been known, he is rewarded not only by the greater exactitude, but also by the greater beauty of his solution. The deeper knowledge given by the exact solution manifests itself by the greater beauty, internal and external, of the relations involved. The exact solution means absolute consistency and truth. Just so the work of the poet, aside from its form, is more beautiful as it is more consistent, *i.e.*, as it is more true. The deeper the knowledge of a poet, the stronger his intuition, the more nearly does he become comparable to the mathematician. The poetic imagination in its highest form is identical with the highest form of imagination which exists, the mathematical. For mere fancy is not imagination. As Lamb says in his "Sanity of True Genius," speaking of the minor wits: "Their imagination is not active—for to be active is to call something into act and form—but passive, as men in sick dreams. For the supernatural, or something superadded to what we know of Nature, they give you the plainly non-natural."

But when we say that poetry must be true, we imply no praise for the realistic school of art, not at least for its abuses. Truth is consistency. Of course what is real, is also true, *i.e.*, consistent, for else it could not be. And being true, it is also beautiful. But thus we can conclude only that the whole of reality is beautiful, not all of its component parts. For often, taking only a portion of what is and neglecting its relation to the whole, that which alone constitutes its beauty, this relation, is lost. And not only its beauty, but its truth is lost. For truth, defined as consistency, means relation; therefore, without relation there can be no truth. Strictly speaking, there is no truth but the whole truth, and the whole truth is always beautiful.

Thus not every event, not every scene of nature, is

capable of artistic treatment, not because it is intrinsically unworthy, but because taken by itself it is unbeautiful. Its beauty can only be appreciated if it is understood as a part of the whole. But some things are so full of relations, are so nearly complete in themselves, that they, taken by themselves, are fit objects for the poet or painter.

And although we have purposely left aside all ethical considerations, the unity of truth and beauty which we have attempted to exhibit, might easily have been broadened to include besides the true and the beautiful, also the good. Some broad-minded men have interpreted this to be the real meaning of the Holy Trinity. Certainly this thought is true, and beautiful, and good. It is but an extension of the idea here advanced, that the poet is a mathematician, the mathematician a poet. Both are also priests; both are imperfect, both yearning for truth and beauty; both strive to attain their end by the same intellectual methods: they differ only in language. And as both become more perfect they approach each other. The perfect poet is the perfect mathematician.

THE ETHICAL IMPORTANCE OF OUR NEW PROBLEMS.*

BERNARD MOSES.

It is always agreeable to know that one has friends, and it is especially agreeable when these friends are at the same time neighbors among whom one has lived and worked for many years. It gives me very great pleasure this evening to be able to suggest to my colleagues from the other side of the continent that one can live in California and not be always lonesome. California, gentlemen of the Commission, is not merely a region of broad wheat fields, of rich orchards and fruitful vineyards; it is a community where the bonds of human sympathy and rational coöperation are drawing the individual members towards a common purpose; it is a land where men grow who share with your fellow-citizens beyond the mountains the sentiments of patriotism and devotion to the common country.

This goodly heritage, men of California, once lay under the dominion of Spain. The beneficent rains that fill our rivers and water our farms once descended for the patriarchal Spaniard. Upon his unbounded fields shone the same sun that to-day pours its golden glory over our hills and valleys. Yet the patriarch and his barbarian dependents and widely-scattered herds were all the land had to show of social achievement. The Californian lived in

*Speech at the banquet given to the Phillipine Commissioners, Palace Hotel, San Francisco, April 12, 1900.

indolence and unconcern in a land within whose soil and mountains was the latent wealth of an empire. But the community of to-day is animated by a new spirit. It has been joined to a living body, and become vitalized by the blood of a young and powerful nation. The science of politics, like the science of healing, is acquiring great confidence in the process of transfusion. By this process the paralyzed community is revitalized. By this process life in California has come to have a larger significance for humanity than that which marked the days of the old regime. By this process carried out here, the area of cultivation has been extended, and a contribution made to the civilization of the world. What has happened here will happen elsewhere.

Yet what has been done in California in causing barbarism to be supplanted by civilization has not been done in pursuance of a preconceived and consciously devised plan; nor has it been done by men who saw the end from the beginning. Nor, moreover, were all of the motives which inspired the events that made California a part of the Union such as the higher moral sentiments of this generation approve. But to show bad motives is not enough to fix an immortal curse. Texas was taken by the United States primarily to enlarge the field of slavery, and one of the remote consequences of taking Texas was the acquisition of California. The sins of the fathers may indeed descend upon their children and their children's children even to the third and fourth generation, but the hope of humanity lies in the fact that these sins do not constitute an everlasting taint of the race. By the fermentation of the ages the nations that have faith in action are eliminating evil and moving towards a better life. The very foundation of our confidence in the republic is the thought that social purity is the result of social fermentation; that the comparison of divergent policies and the conflict of antagonistic opinions will show us the way that is right.

The way that is right is the way that, as a nation, we seek. This nation was never more sensitive on its moral side than it is to-day. If we would interest the millions of our countrymen in any question, we must show them that it has a moral bearing. If we would fasten their attention even on a technical monetary question, we must present the question in such a form that it seems to have a moral aspect. We make it appear that a wrong has been done that must be righted. We become the friends or the enemies of a metal dug out of the mountain, and a question demanding a purely financial calculation is thus caught up and carried over the land on the blazing emotions of the people. If men of this nation cry out against a line of public policy, it is because they fear that justice will not be done. When a strong voice was raised against legislation concerning Puerto Rico, it was because men, not weighing all the consequences of the proposed action, feared that the weak and unfortunate inhabitants would continue to be oppressed. If we go to the islands of the seas with nothing better than Spain's contribution to their civilization, the moral sentiments of this nation will find a voice in unmistakable condemnation. On the other hand, for conduct that is wise and righteous and inspired by high ideals, this nation offers a moral support such as was never before manifest in the world. Other nations have been populous; other nations have had powerful armies; but no other nation ever had so large a number of men and women of independent personality; no other nation ever had so large a percentage of its population competent to express free moral judgments. It is this quality that fixes our place in the world; and it is this quality that will be a conspicuous factor in determining our career in the future.

Governmental forms and purposes that have satisfied other nations will not be approved. We shall not repeat the history of other nations, because the new attitude and the new point of view of the individual citizens have given us a new national purpose. Humanity is not spinning

around in an unvarying circle, but rising with each great revolution to a point of clearer and wider vision. No great and progressive nation is willing at the present time to solve the vital problems of its career, as other nations have solved apparently similar problems. New ideals are leading us to demand new results. In spite of the marvelous creative power and enlightenment of the Romans in matters of law and government, the nation to which we belong would not accept certain solutions which they found worthy of approval. We repudiate with a vigorous denunciation the conduct of governors who plunder the provinces to increase the wealth and brilliancy of the capital. We repudiate the policy of Spain under which the better part of a continent was hampered in its development, in the mistaken notion that thereby the mother country would increase in wealth. Even the plan under which the English in America and Australia swept away the aborigines, although the result may have been inevitable, is not easily accepted by the moral judgment of our generation. As a nation we have moved beyond the ethical point of view occupied by the Romans, the Spaniards, or the Englishmen of the earlier centuries; and for this reason the problems that arise out of our relation to other races demand a new solution. Among the nations of to-day none stands more stoutly for justice, tempered with leniency for the weak, than that to which we belong. Even the most conspicuous imperfections of our social order arise from an extreme solicitude for the individual citizen under authority. If there is a failure of justice in our courts, it is not that the accused is recklessly crushed under the heavy hand of the law; but rather that the law is sometimes tempered by our charity and regard for our fellowmen to spare, where, in strict justice, it might condemn. These national qualities offer the surest guarantees of fair and liberal treatment to all persons over whom the authority of our government extends. A bill of rights and constitutional guarantees have only such value as is given them by the character of

the nation that stands behind the constitution. It is not the laws which we have written that have made our land a desirable refuge for the immigrant from every quarter of the world, but the character of the nation as displayed in the execution of its laws. The nation's sensitiveness to moral considerations, its charity and leniency towards the individual citizen, and its inability to forget that a man is a man, are worth more to the weak under our authority than all the guarantees or constitutional limitations that were ever written in the books of the law.

No form of institutions, however cunningly devised and carefully elaborated, can insure a righteous administration. For the government of her American dependencies Spain created a system of institutions marvelous in the completeness of their form; yet Spain's administration of these dependencies does not furnish striking examples of either political wisdom or political righteousness. The failure here was a moral failure. The men behind the institutions failed to conceive a proper object toward which the activity or operations of the institutions should be directed. Less complete institutions, with a more rational purpose entertained by the people under them, led the English colonies towards the achievement of power and social prosperity. The form may have been defective, but the spirit was right. Institutions in themselves have no saving power. It is the intelligence, the devotion, the high moral purpose of the nation that must preserve and carry it on to the realization of its high purpose. Without these things beneficent government becomes an impossibility, and nations fall by the way. In matters of religion, faith is the one thing needful; in matters of politics, patriotism is the one thing needful. And the patriotism of the American people is to make impossible the realization of the dreams of the prophets of evil; and, backed by the morality and manhood of this nation, it is to lead us in the way that is right.

THE TRAVELLING FELLOWSHIP IN GEOGRAPHY.

On April 26, President Wheeler received the following letters, which are self-explanatory:

2221 WASHINGTON ST.,
SAN FRANCISCO, CAL., April 26, 1900.

Benjamin Ide Wheeler, LL.D.,
President, University of California, Berkeley, Cal.;

DEAR PRESIDENT WHEELER:—One year ago I obtained from Mr. T. T. Williams (on behalf of W. R. Hearst, Esq.) the promise of one year's salary or scholarship for a student of the Department of Geography to enable him to make an examination of the raw products, manufactures, transportation methods, commerce, etc., of the Philippines; and from R. P. Schwerin, Esq., Manager of the Pacific Mail Steamship Company, a free passage from San Francisco to Hongkong and return, within one year.

To-day the gentlemen named have renewed their offer. Mr. Schwerin has placed his proposition on file in his office; and Mr. Williams has given me the enclosed letter, which I beg you to receive officially.

* * * * * * * *

Very respectfully yours,
GEORGE DAVIDSON.

THE EXAMINER,
SAN FRANCISCO, CAL., April 26, 1900.

George Davidson, Esq.,
Professor of Commercial Geography,
University of California, Berkeley, Cal.;

MY DEAR PROFESSOR:—Referring to the offer *The Examiner* made editorially last year to pay the support of a graduate of your class who might visit the Philippines and make such reports on raw products, manufactures, trade, commeree, and mines as would be valuable to the interests of San Francisco, would say that *The Examiner* is at all times ready to make good its proposition. We think the suggestion of sixty dollars a month not quite adequate, and will allow the student seventy-five dollars a month for one year.

Whenever we hear from the University authorities that this proposition is accepted and they will notify us that they are prepared to send such student from your class, we will deposit with the Treasurer of the University, or any other person they may suggest, the sum of nine hundred dollars, being in full for such proposition.

Trusting this will be satisfactory, we remain

Yours very truly,

W. R. HEARST,
Proprietor of *The Examiner*.
By T. T. WILLIAMS,
Business Manager.

In acknowledgment President Wheeler sent the following letters to the gentlemen thus establishing the Travelling Fellowship in Geography:

BERKELEY, May 5, 1900.

MY DEAR MR. WILLIAMS:—Professor Davidson has transmitted to me your very kind letter of April twenty-sixth in which *The Examiner* renews its offer to pay $75 per month for one year to a Travelling Fellow in Geography of the University of California, that a scientific study may be undertaken of the industrial and commercial conditions in the Philippines. You have given wise and timely aid toward a very valuable undertaking. We hope soon to be ready to name the student who, through the public spirit of *The Examiner*, is to enjoy this exceptional opportunity of studying a problem of fascinating interest and of vital concern.

Very sincerely yours,
BENJ. IDE WHEELER,
President of the University.

Mr. T. T. WILLIAMS,
The Examiner,
San Francisco, Cal.

BERKELEY, May 5, 1900.

MY DEAR MR. SCHWERIN:—The University of California deeply appreciates the kindness of your offer of free transportation from San Francisco to Hong Kong and return for the Travelling Fellow of the Department of Geography who is to visit the Philippines in order to study industrial and commercial conditions there. You have given a helping hand to an undertaking which should be productive of much good. I hope soon to let you know the name of the young man who is to enjoy this exceptional opportunity.

Very sincerely yours,
BENJ. IDE WHEELER,
President of the University.

R. P. SCHWERIN, ESQ.,
Manager of the Pacific Steamship Company,
San Francisco, Cal.

On May 15, 1900, President Wheeler reported to the Board of Regents that he had appointed William Clark Haswell, (B.S., 1900, College of Commerce), Travelling Fellow in Geography.

OFFICIAL ACTION.

At a meeting of the Academic Council held March 30, the following report was adopted:

To the Academic Council:

The Committee appointed, on March 9, 1900, *To consider the advisability of obtaining a proper academic dress for members of the Faculty and the feasibility of introducing this dress this year*, calls attention to the fact that the cap and gown are now worn on official occasions at Harvard, Yale, Columbia, Princeton, Pennsylvania, Johns Hopkins, Catholic University of America, Chicago, Michigan, and many other institutions of learning.

The Committee recommends the following to take effect on and after Commencement of the present year:

I. The academic cap and gown adopted by the *Intercollegiate Commission* in 1895 to be worn; (1) By members of the Faculties at Berkeley, on all public celebrations; (2) By the members of the committee in charge of the examination and by the candidates, at all final examinations for higher degrees. (A respectful recommendation to the Graduate Council); (3) By the recipients of degrees, on the occasion when the degree is conferred. (Subject to concurrence of the Graduate Council); (4) By members of the University, on such occasions as the President of the University may desire.

II. The Committtee recommends the following types as illustrated in Bulletin 13 of the Intercollegiate Bureau and Registry of Academic Costume, filed herewith.

Gowns: For undergraduates, black stuff, type 6, no hood; Bachelors, black stuff, type 6, with hood; Masters, type 6, with hood; Doctors, type 9, with hood.

Members of the Faculties should wear the gowns to which their academic degrees entitle them, provided that all have the right to appear in gowns of type 7, p. 12.

Hoods: For Bachelors and Masters, as on pp. 3 and 9 of Bulletin 13; for Doctors, type Y-lip on p. 11.

Caps: The Oxford cap as stated on p. 15 to be worn in all cases in conjunction with the gowns, the tassel to be black except in cases of doctors, who may wear gold.

III. The President is requested to inform the Faculties in San Francisco of the action of the Faculties in Berkeley, with the hope that corresponding action may be taken by them.

Respectfully submitted:

M. W. HASKELL,
Chairman.

At a meeting of the Academic Council held May 14, the following report was adopted:

To the Academic Council:

Your standing Committee on Scholarships beg leave to report as follows:

Applications for appointment as Phoebe Hearst, State of California, and Levi Strauss scholars in the University numbered 202, about the same number as were received last year.

Your committee has given most careful scrutiny to the cases presented to it and finds that the number of deserving applicants is considerably in excess of the provision available for their assistance. The criteria upon which applicants must be judged according to the University publications concerning these scholarships are as follows: (1) character, (2) ability and promise as a scholar, (3) pecuniary circumstances and needs. The policy of your committee this year has been in the direction of attaching increased importance to the essentials of character, ability, and promise, and relatively less to pecuniary circumstances and need, because the former essentials are the best surety that the assistance shall minister to highest ends in individual attainment and in public service, and yet no award has been recommended unless the committee was convinced that the need of the applicant was urgent.

UNDERGRADUATE SCHOLARSHIPS FOR 1900–1901.

Phœbe Hearst Scholars:—Reappointed: *Alice Marion Cummings, Senior, Social Sciences, Santa Cruz; May Eleanor Gates, Junior, Social Sciences, San Francisco; Anne Lucia Holmes, Senior, Social Sciences, Riverside; Kate Courtenay Johnston, Senior, Letters, Los Angeles; Rachel Kurlandzik, Senior, Social Sciences, San Francisco. Newly Appointed: †Agnes Frisius, Senior, Social Sciences, Alameda;

*To December 31, 1900.

†From January 1, 1901.

Katharine Maloy Layne, Senior, Social Sciences, Pomona; Eliza Cross, Senior, Social Sciences, Saratoga; Sally Agnes Dexter, Junior, Social Sciences, Little Shasta.

State of California Scholars:—First Congressional District. Reappointed: William Burt Albertson, Junior, Mining, Buckeye, Shasta County; Louis Albert Elmore, Sophomore, Letters, Santa Rosa; Rose Humann, Sophomore, Social Sciences, Santa Rosa. Newly Appointed: Beatrice Urania Hagmayer, Sophomore, Social Sciences, Cloverdale. Second Congressional District. Reappointed: Minnie Beatrice Bannon, Senior, Letters, Sacramento; Mary Isabel Stockton, Senior, Social Sciences, Stockton; Otto Goldman, Sophomore, Mechanics, Thermalito. Newly Appointed: Eleanor Fay Stilson, Freshman, Chico. Third Congressional District. Reappointed: *Agnes Frisius, Senior, Social Sciences, Alameda: Fanny H. Avery, Junior, Social Sciences, Berkeley. Newly Appointed: †Nina Melissa Farwell, Junior, Letters, West Berkeley; John Morton Eshleman, Junior, Letters, Berkeley; Elizabeth Adelaide Herrmann, Junior, Letters, Berkeley. Fourth and Fifth Congressional Districts (together). Reappointed: Alice Bowman Wright, Senior, Letters, Fourth District, San Francisco; Vincenza Catherine Milledge, Senior, Social Sciences, Fifth District, San Francisco; Gertrude Sutcliffe, Senior, Social Sciences, Fourth District, San Francisco; James Hugh Wise, Sophomore, Mining, Fifth District, San Francisco; Ellen McKay Hensel, Junior, Letters, Fifth District, San Francisco. Newly Appointed: James Clark Blair, Senior, Letters, San Francisco; William John Allen, Sophomore, Social Sciences, Palo Alto; Ella Gertrude Cook, Sophomore, Social Sciences, Campbell. Sixth Congressional District. Reappointed: Frank George Goodenow, Senior, Letters, Los Angeles; Robert Pettinger Stephenson, Senior, Mechanics, Nordhoff; Edna Tullock Owen, Senior, Social Sciences, Santa Barbara. Newly Appointed: Margaret Elizabeth Doherty, Senior, Social Sciences, Salinas. Seventh Congressional District. Reappointed: Flora Genevieve Savage Manchester, Senior Natural Sciences, Tulare; John Nolan Chain, Senior, Natural Sciences, San Diego. Newly Appointed: Ruby Lacey Cunningham, Junior, Natural Sciences, San Bernardino; Clinton Kelly Judy, Sophomore, Letters, Winchester.

Levi Strauss Scholars:—First Congressional District. Reappointed: Jessie Bohall, Senior, Social Sciences, Arcata; Edith Edna Gaddis, Senior, Social Sciences, Santa Rosa; Edith Mabel Kendall, Senior, Chemistry, Manchester. Newly Appointed: John Joseph Mazza, Sophomore, Social Sciences, Nicasio. Second Congressional District. Reappointed: Amy Gertrude Van Deerlin, Senior, Social Sciences,

*To December 31, 1900.

†From January 1, 1901.

Grass Valley. Newly Appointed: Carlos Parker Griffin, Senior, Mining, Tuolumne Co.; Martha Elizabeth Miller, Sophomore, Social Sciences, Stockton; Mabel Elizabeth Coddington, Freshman, Social Sciences, Auburn. Third Congressional District. Reappointed: Fred Field Goodsell, Junior, Social Sciences, Byron; James Mossin Koford, Sophomore, Social Sciences, Vacaville. Newly Appointed: Florence Trebitt Hudson, Junior, Letters, Niles; Florence Mabel Preble, Senior, Letters, Oakland. Fourth and Fifth Congressional Districts (together). Reappointed: Frank Walter Kerns, Senior, Mechanics, Fifth District, San José; Annie Harriet Allen, Senior, Letters, Fifth District, San Francisco; Monroe Emanuel Deutsch, Junior, Letters, Fourth District, San Francisco; Theobald Percy Bayer, Senior, Social Sciences, Fifth District, San José; Violet Evelyn Beauchamp Baugh, Sophomore, Social Sciences, Fifth District, San Francisco; Flora Adelina Domenica Bacigalupi, Junior, Letters, Fourth District, San Francisco. Newly Appointed: Edward Gustave Cahill, Sophomore, Mining, Fifth District, San Francisco; Anna Herkner, Freshman, Social Sciences, Fifth District, San José. Sixth Congressional District. Reappointed: Walter Wadsworth Bradley, Senior, Mining, Spreckles; Charles Clarence Williams, Sophomore, Mining, Whittier. Newly Appointed: Mary Ellen Hubbard, Junior, Social Sciences, Simmler; Rachel Laurena Steele, Sophomore, Social Sciences, Compton. Seventh Congressional District. Reappointed: Henry Noble Bagley, Sophomore, Chemistry, Merced; Estella Melinda Murdoch, Junior, Natural Sciences, San Diego; Edwin Everett Keyes, Junior, Social Sciences, Warner.

Cornelius B. Houghton Scholar: Florence Eunice Barnard, Senior, Social Sciences, San Francisco.

Respectfully submitted:

E. J. WICKSON,
J. H. SENGER,
E. E. BROWN,
M. W. HASKELL,
G. M. STRATTON,
Committee.

CURRENT NOTES.

On Thursday, April 26, the final exercises of the Corps of University Cadets were held on the campus. Before the official inspection by Lieutenant Colonel Maus, U. S. A., in the morning, Mrs. Hearst presented the regiment with a new stand of colors made of the finest silk. She accompanied her gift with the following words:

"Students of the University of California:—It is my privilege to place in your keeping this flag of our dear land, to honor it at home and abroad. This stand of colors will, I trust, inspire renewed enthusiasm and love for your Alma Mater, under whose fostering care you are prepared to gain the triumphs of peace. May your fidelity to its ideals bring a largeness of life that will touch the world to its betterment."

The regimental parade and review in the afternoon were followed by battalion and company drills, and battle exercises; and closed with the salute to the national colors.

COMMENCEMENT WEEK.

Commencement week of 1900 opened with a concert by the Stanford Musical Clubs in Hearst Hall on Wednesday evening, May 9. Owing to rain, the Class Day exercises, announced for the next day, were postponed until Saturday; but in the evening the Class of '98 held a reunion at Hearst Hall.

On Friday morning President David Starr Jordan of the Leland Stanford Junior University, addressed a joint meeting of the California Union and the Graduate Club, at Hearst Hall, on "The Freedom of the University." In the evening, through the generosity of Mrs. Hearst, the Commencement Ball was held in Hearst Hall.

On Saturday, May 12, the postponed Class Day exercises

were given. In the morning the usual pilgrimage to the various buildings was made: at South Hall, Professor LeConte briefly addressed the class on the influence of the University in forming character; at the Library, Mr. H. S. Robinson, the president of the graduating class, on behalf of the class, presented President Wheeler, with a check for one hundred and fifty dollars, to be the nucleus of a Class of 1900 Library Fund, and President Wheeler responded, expressing his appreciation of the gift and the spirit that prompted it; and at East Hall, Miss Alice Duffy presented to Mrs. Hearst the loving cup that had been purchased by the subscriptions of the student body. After the buildings had been visited, the procession moved to the site selected for the first of the new buildings to be erected, the President's house. After prayer by Professor Bacon, Mr. A. J. Cloud spoke for the graduating class and Mr. Arthur Rodgers for the Regents. President Wheeler then read the remarks prepared for the occasion by Mrs. Hearst: "It is peculiarly fitting that the first official act of helping toward the realization of our plan for the greater university should be the laying of a foundation for a home. Around the life of this home must gather those genuine qualities that all will recognize who sit at its fireside; from it must emanate those goodly sympathies that testify without words what is meant by the brotherhood of man; in it must the student find inspiration, and from it must flow those influences most potent in building the spiritual university.

"We who have most at heart the interests of the University of California have no chimerical views in regard to the architectural plans that have been prepared, nor do we overestimate the larger ultimate advantage far beyond the mere material one of having in our midst an enduring expression of beauty and harmony. It is our hope that, as time brings the opportunity, there may rise on these grounds noble buildings ideally adapted to the needs of the ever-broadening domain of thought, investigation, and experiment, not merely for erudition, but for the preparation that

will ennoble it and take the initiative in the intellectual and moral advance of the years to come."

Mrs. Hearst then turned the first earth with a silver spade, and was followed by the President and representatives of the Regents, the Faculty, and the student body.

The final ceremony of the forenoon was the unveiling of Douglas Tilden's bronze statue of "The Football Players," which had been offered by Mayor Phelan, of San Francisco, as a trophy, and won by the University of California football elevens of 1898 and 1899. Mr. F. G. Dorety, as the representative of the students, and Mr. J. R. Whipple, as the representative of the victorious eleven, spoke in appreciation of Mayor Phelan's generosity.

In the afternoon the extravaganza "Jason and the Golden Fleece" was given by the graduating class in the natural amphitheatre east of the Mining and Civil Engineering Building.

Saturday evening was given up to reunions and banquets; that of the Class of '90 in East Hall, of the Class of '90 of the Hastings College of the Law in San Francisco, and the farewell banquet of the graduating classes at the Palace Hotel, San Francisco.

On the afternoon of Sunday, May 13, the Rev. Chas. R. Brown, pastor of the First Congregational Church of Oakland, preached at the First Presbyterian Church, Berkeley, the baccalaureate sermon, from the text, "The tabernacle of God is with men and he will dwell with them." Rev. 21:3.*

On Monday meetings of the Graduate Council, Academic Council, and Academic Faculties were held in the Philosophy Building; and those who had satisfactorily completed courses in the departments at Berkeley recommended to the Regents for degrees. During the afternoon the graduating class enjoyed the hospitality of Mrs. Hearst at her country residence, Hacienda del Pozo de Verona. In the evening the Alumni of the Medical Department banqueted at the

*See p. 168.

Palace Hotel, San Francisco; and the Class of '79 held a reunion at the home of Dr. Geo. C. Pardee, in Oakland. The year's work of the Philosophical Union was brought to a close by a lecture in the Philosophy Building by Associate Professor Stratton on "The Spiritual Implications of Psychological Experiments." The discussion was opened by Dr. W. P. Montague and Professor LeConte.

On Tuesday afternoon Rev. Robert J. Burdette delivered the address at the annual public meeting of the Phi Beta Kappa Society; and in the evening the Alumni Association, the Dental Department, and the College of Pharmacy, held alumni banquets in San Francisco.

The thirty-first commencement of the University was held in Harmon Gymnasium on the morning of Wednesday, May 16, 1900. The procession formed between the Library and North Hall, and moved, in double file, around the north end of North Hall to the Gymnasium in the following order: Candidates for degrees, undergraduates, alumni, Faculties, Regents, invited guests, and the President of the University. At the entrance to the Gymnasium the candidates separated into two files, and allowed the rest of the procession to pass through into the building. The Faculties, Regents, invited guests, and the President took their places upon the stage, while the candidates were seated in a section reserved for them. Added dignity and impressiveness were given to the procession and the exercises by the fact that the candidates and the Faculties were in academic dress.

After prayer by the Rev. J. K. McLean, D.D., President of the Pacific Theological Seminary, the President introduced Mr. Edwin Milton Wilder, B.L., of the graduating class of the Medical College, who spoke on The Necessity of Medical Schools in a System of Public Instruction. Mr. Alfred Charles Skaife followed with an address on A Citizen of the University. The Sacrifice of Education was the subject of Mr. Willard Giles Parsons' paper, and Miss Lillie Evelyn Moller closed the list of student speakers with a paper on Life—a Means or an End? President

Wheeler read a statement for the year 1899–1900,** and then addressed the graduating classes.†

The following degrees were then conferred:

The degree of Bachelor of Science (College of Chemistry) upon:—Joseph Corbett Christensen, Robert Hilliard Collins, Manuel Egnatius Flores, Emma Francis French, James Percy Grant, Gertrude Helen Hampton, Gertrude Longmore, Hugo Gustave Poheim, Alva Jacob Remmel, *William Thompson Skilling, Norman Eugene Smith, Willard Howard Weslar, Clyde Merrill Westcott.

The degree of Bachelor of Science (College of Civil Engineering) upon:—Benjamin Allen Baird, Francis Lucien Burckhalter, Percy Edgar Hicks, William Murray Kerlinger, Henry Hawley Patterson.

The degree of Bachelor of Science (College of Mining) upon:—Albert James Anderson, John William Barnes, William Lee Bowron, Henry Francis Brizard, Joseph Rodney Brown, Lester Byrd Cheminant, Arthur James Crocker, David Goodale, Richard Snell Haseltine, William Halsted Hilton, Byron Everett Janes, William Wallace Mein, Fred Ludwig Morris, John Carroll Nicholls, Edwin Letts Oliver, Roland Letts Oliver, Frank Warner Phelps, John Allen Reid, Dwight Timothy Smith, James Clarence Sperry, Edwin Henry Tracy, Mark Henry White, Cyril Williams, Jr., Alexander Wise.

The degree of Bachelor of Science (College of Mechanics) upon:—Arthur Clarence Babson, Ross J. Brower, *Allan Corey Burdick, *Herbert William Crozier, Godfray DeLisle, Otto Emil Falch, Jr., John James Alexander Hay, James Joseph Kline, Conrad Loring, George Herbert Masters, James Daniel Mortimer, Howard Frederick Munson, William Franklin Neiman, Yoneshiro Shibata, Ray Whitman Simonds, MacDonald Spencer, Herman Newcomb Sulliger, *Nelson Wamsley Thompson.

The degree of Bachelor of Science (College of Agriculture) upon:—Roy Knight Bishop, *Frank Freeman Ellis, Alfred John Smith.

The degree of Bachelor of Science (College of Commerce) upon:—William Clark Haswell, Howard Daniel McCreary, Edward James Talbott.

The degree of Bachelor of Science (College of Natural Sciences) upon:—Gertrude Eudora Allen, Ruth Hebron Armstrong, Otto Bentz, Morris Hoyt Covert, Hosapher Newell Ewer Daniel, Roy Ernest Dickerson, Percival Dolman, Laura Lorine Donnelly, Grace Belle Edson, Saul Epsteen, *Earl Wiswall Garrison, James Brown Herreshoff, Jr., *Adelaide Mary Hobe, *Louise Hamlin Johnson, Alice Kimball, Lillian

**See p. 161. †See p. 163.

* Degree conferred December 26, 1899.

Nathan, Ella Jane O'Connell, Adel Arta Parker, Euphemia Sinclair Paxton, *Jennie Louisa Powers, Frederick Willson Rockhold, Alma Emma Stockwell.

The degree of Bachelor of Philosophy (College of Social Sciences) upon:—*Corinne Carter, *Caroline Duval Ellsworth, *Charles Edmund Fryer, Frances Hammel Gearheart, Rachel Scott Gilmour, Charlotte Milliken Hoak, *Charlotte Mignon Hoffman, Ray Howell, *Harry Arlyn Linscott, *Isabella Mogeau, *Walter Newman.

The degree of Bachelor of Letters (College of Social Sciences) upon:—Edith Mary Allen, Lawrence Arnstein, Evelyn Kate Aronson, Herbert Wilmarth Bailey, Minnie Elizabeth Boucher, Herbert Lincoln Breed, *Edith Sara Brownsill, Edward Esbern Christensen, Ernest Augustine Clausen, Archibald Jeter Cloud, Ada Emma Conrad, Annie Deborah Coulter, Adeline Belle Croyland, William Henry DeBell, B.S., Ezra William Decoto, Jesse Leroy Dibert, Major Walter Dinkelspiel, Fred Gerber Dorety, Alice Eugenia Duffy, *Julia C. Eppinger, Bessie Lea French, May Everett Green, *George Hillary Harlan, *Victor Hendricks Henderson, Charlotte Anna Henley, Eugene Elbert Hewlett, Herbert Wynford Hill, Daisy Gilene Hinckley, Wilfred Reginald Haughton Hodgkin, Alice Humphreys, Richard Ernest Hyde, Jr., May Noble Jackson, Gertrude Maxwell Jewett, Gertrude Olive Kelsey, Joseph Lorenzo Kennedy, Eugenie Lacoste, Ellen Cameron Lamont, Joseph Vincent de Laveaga, Lydia D. Lawhead, Louise Adra Linscott, Florence Bertha Livingston, Walter Loewy, Estelle Jane Lundy, Eccleston Bowers Marsh, Mary Elizabeth McCabe, Matilda Liesette McCulloch, *Lena Florence McDonald, *Duncan McDuffie, June Laura McGlashan, Elizabeth Davidson McMillan, Dorothy Meininger, Clinton Ellis Miller, *Flora Ernestine Mitchell, Lillie Evelyn Moller, John Robert Moulthrop, Mitchel William Nathan, Anna Josephine Neale, Jeannette Newman, Amelia Helen Newmark, Ernest Warner Oliver, Clarence Warren Peck, Charles Edwin Reith, Mathilde S. Richard, Harrison Sidney Robinson, John Rose Robinson, Alice Jane Rooney, Mable Frances Ruch, May Louise Sellander, Florence Helen Sollman, William Clay Spencer, Agnes Steedman, May Elizabeth Sweeney, Leland Howard Tracy, Fannie Earl Tyrrell, *Nellie Vance, Mamie Cooper Voorsanger, Gertrude Hazel Wachs, William Kennedy White, Anna Ruth Wilder, Mary Grace Wiltshire, Oscar Wolf, Cora B. Young, B.L.

The degree of Bachelor of Arts (College of Letters) upon:—Frank William Aitken, Ernest White Arnold, Fred Goodrich Athearn, Purle Evelyn Bottomes, Harold Cornelius Bradley, Asa Horatio Cogswell, Joseph Oscar Downing, *Lucia Hester Fish, *Helen Augusta Frost,

*Degree conferred December 26, 1899.

A.B., Noel Hunt Garrison, Bertha Green, A.B., Eleanor Stewart Hammack, Mary Victoria Ernst Harris, Augustus Loring Hart, Jr., Reno Harley Hutchinson, Alegra Hutton, *Alexander Marsden Kidd, Eleanor Irene Lavallee, Edward Walter Lehner, Ivan Mortimer Linforth, Lena May Macaulay, Pearl Marshall, Dora Louise Martin, Willsie Manning Martin, *Margaret Lilian Matthew, Maxwell Latham McCollough, Francis Robert Morrison, Willard Giles Parsons, Amandus John Richard Paulsen, Bertha Sanborn, A.B., Alfred Charles Skaife, *Nannie Fessenden Skimmings, *Sarah Elizabeth Marquand Smoot, *Katharine Stack, *Aimée Steinhart, Grace Adelaide Sullivan, Arthur Gould Tasheira, Ethel Mary Wagner, Fern Eva West, Minnie Ray Wilson.

The degree of Master of Science (College of Chemistry) upon:—Irving Cowan Allen, B.S., (Thesis: A Preliminary Report on the Relative Values of the Fuels used in the Bay District of San Francisco.)

The degree of Master of Science (College of Agriculture) upon:—*Minnie Reed, B.S. and M.S., Kansas State Agricultural College, (Thesis: Structure and Parasitism of a Marine Ascomycete.)

The degree of Master of Science (College of Natural Sciences) upon:—Ralph Erwin Gibbs, B.S., (Thesis: Phyllospadix as a Beach-Builder); Rowe Montrose Hathaway, B.S. (Thesis: On the Hypergeometric Function Expressed as a Double Loop Integral); Yoshisaburo Kuno, B.S. (Thesis: An Adaptation to Long Intervals of v. Oppolzer's Method of Computing a Comet Orbit from Four Places with Short Intervals); *Perley Gilman Nutting, A.B., Leland Stanford Jr. University, (Thesis: On a Null Bolometric Method for the Study of the Functional Variations of the Absorption and Reflection of Radiation).

The degree of Master of Letters (College of Social Sciences) upon:—Knight Dunlap, Ph.B., (Thesis: The Effect of Imperceptible Shadows upon Judgments of Distance); Viva Barbara McArthur, Ph.B., (Thesis: Exemptions from Taxation in the United States); Guenevere Metkiff, B.L., Pomona College, (Thesis: An Attempt to Discover the Genetic Principles of Literary Criticism); Edna Waymire, B.L., (Thesis: The Dramatic Movement in England from 1580 to 1650.)

The degree of Master of Arts (College of Letters) upon:—William Hardy Alexander, A.B., University of Toronto, (Thesis: The Pentasyllabic Endings of the Lucretian Hexameter); Hiram Bingham, Jr., A.B., Yale University, (Thesis: The Growth of American Supremacy in Hawaii); Lolo Margaret Knepper, A.B., University of Idaho, (Thesis: Goethe's Faust in England; being a Discussson of the Attitude of the English Public towards Goethe's Masterpiece); Gifford Horace Greeley McGrew, A.B., Harvard University, (Thesis: History

*Degreed conferred December 26, 1899.

of Early High Schools); Eugenie Louise Shaw, A.B., (Thesis: The Second Chorus of the Agamemnon.)

The degree of Graduate in Pharmacy (California College of Pharmacy) upon:—Louis Michael Aguirre, George Washington Beck, Will David Burton, Nathan A. Cahn, Frank Martin Carter, Sanford Warren Cartwright, B.S., Will Stacker Cherington, Warren Hillson Cole, Isaac Henry Cory, Paul Gerald Dorsey, William Charles Eppenhimer, Robert Howard Eveleth, Richard Mitchal Fernald, Emmett Mahew Fowler, Otto George Freyermuth, Warren Florimund Geary, Alfonso Robert Gustave, Gustav Albert Hutaff, Robert Benson Heath, Elsie Bell Higgins, Walter Edward Jackson, Alfred Ben Jacobs, Frederick Schneider Klinkner, Gustave Oscar Klotz, Joseph Jeremiah Mahony, Patric James McGarry, Daniel Newcomb McMillan, George Oliva, Mark Alvin Sawrie, Leo Amandus Schmitz, Harry Christian Stauffer, Frank Marmion Teass, James S. Torrence, Alice Caroline Ward, John Witmer.

The degree of Doctor of Dental Surgery (Dental Department) upon:—Frank Wilson Anderson, Walter Pike Austin, Gottfrid Bergstrom, Julien Rex Bernheim, Daniel Edward Blackburn, Edward James Broad, *Paul Milton Burns, Eduardo Caceres, Thomas Merritt Carmichael, George Harry Casaday, Daniel Henry Cockerton, Philip Stephen Cummings, Alice May Davis, Joseph Horace Doyle, Hubert Crees Eller, Charles Edward Farman, John Howard Finley, John William Ginno, Arthur Earle Hackett, James Lafayette Halsted, Jr., Charles Sumner Hardy, Joseph M. F. Hocker, Francois Louis Marium Hus, Anna Dorothea Joost, David Harrison Leppo, Albert Francis Lucchetti, Frank Michael Madden, Herbert Stanhope Meyer, John Milton McClish, Christopher John Mogan, Edna Fulton J. Moore, Alvah Nevada Morgan, Totaro Hiroshi Ohhara, Daniel Augustus Ostrom, Jr., George Hudson Phillips, Henry J. Phillips, Wallace Wall Reading, Frederick Joseph Rulison, John Hartley Scott, Henry Charles Soher, John Christopher Somersett, Marion Laurence Tobriner, Will Merrill Tryon, Frank Vaughan, Eugene George Woolsey.

The degree of Doctor of Medicine (Medical Department) upon:—Harry Everett Alderson, David Eugene Bacigalupi, Carlotta Ruth Deckelman, Dora Ida Dorn, Ernestine Doychert, Edgar James Farrow, William Harvey, Rutherford Buchard Irones, Elizabeth Frances Joyce, Bernard John Klotz, Samuel Walter Ross Langdon, Jr., A.B., Julia Paulina Larson, Thomas Michael Maguire, A.B., George Jewett McChesney, A.B., Arthur Merrill McIntosh, Tadataro Miyabe, William George Moore, Mary Elizabeth Nolan, Peter Opsvig, A.B., Mathew Denis Pratt, George Frederick Reinhardt, B.S., Raymond John

*Degree conferred December 26, 1899.

Russ, B.S., Louis Victor Saph, B.L., Frank William Simpson, John Francis Sullivan, B.S., George Joseph Sweeney, Theodora Elliott Vassault, Herbert Charles Watts, Emmet Le Roy Wemple, Edwin Milton Wilder, B.L.

The degree of Bachelor of Laws (Hastings College of the Law) upon:—Marion Sargeant Blanchard, Ph.B., Fred Ellsworth Borton, John Friendlander Bowie, Louis Horace Brownstone, Ph.B., Marcel E. Cerf, Ph.B., Francis Byron Clarke, Edwin Ivan Clawiter, Charles Francis Craig, B.L., William Berry Craig, Alvin Buell Crowell, Letus Narcissus Crowell, Francis Herbert Dam, A.B., André Dessouslavy, Wm. Tecumseh Sherman Doyle, A.B., LL.B., Walter Griffiths, M.A., Robert Lee Husted, Charles McFerson Mannon, A.B., David Franklyn McWade, Ph.B., *Joseph O'Connor, B.L., Emil Cornelius Peters, Samuel Russell Rodgers, Ph.B., Ransom Carey Van Fleet, A.B.

The degree of Doctor of Philosophy (College of Natural Sciences) upon:—Walter Charles Blasdale, B.S., M.S. (Thesis: A Chemical Study of the Indument found on the Fronds of Gymnogramme triangularis).

The degree of Doctor of Philosophy (College of Social Sciences) upon:—Jessica Blanche Peixotto, Ph.B. (Thesis: A Comparative Study of the Principles of the French Revolution and the Doctrines of Modern French Socialism, with the Origin and Development of each).

The University Medal was then presented to James Daniel Mortimer of the College of Mechanics.

The following were then commissioned, the names being read by Professor Soulé, Acting Professor of Military Science and Tactics, and the commission being handed to each graduate by the President:—To be First Lieutenant, William Franklin Neiman, William Halsted Hilton, Major Walter Dinkelspiel, John Carroll Nicholls, Jesse Leroy Dibert, Arthur William Goodfellow, Victor Hendricks Henderson, Howard Squires, and John Anthony McGee; to be Captain, Ernest Warner Oliver, William Anderson Scott Foster, Joseph Vincent de Laveaga, George Asa Harker, Jack Dietrich Hoffman, Edward Gerhart Kuster, Arthur Clarence Babson, Arthur Gould Tasheira, Paul Selby, Maxwell Latham McCollough, Roland Letts Oliver, Edwin Letts Oliver; to be Major, Robert Hilliard Collins and Percival Dolman; to be Lieutenant-Colonel, Harrison Sidney Robinson; to be Colonel, John Robert Moulthrop.

The exercises closed with the benediction by the Rev. J. K. McLean.

* Degree conferred December 26, 1899.